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THE  
**COMPLEAT**  
**Husband-man:**

OR,  
A discourse of the whole Art  
OF  
**HUSBANDRY;**  
BOTH  
Forraign and Domestick.

Wherein many rare and most hidden se-  
crets, and experiments are laid open to  
the view of all, for the enriching  
of these NATIONS.

Unto which is added

A Particular discourse of the Naturall History  
and Hubandry of IRELAND.

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By SAMUEL HARTLIB, Esq.

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April 28.

LONDON,

Printed and are to be sold by Edward Brewster at the Crane in  
Paul's Church-yard. 1659.



## TO THE READER.

Courteaus Reader.

**P**He Discourse which I did formerly publish concerning the *Brabant-Husbandry*, was somewhat imperfect, nor was the Author thereof then known unto me; but since I have learned who the Author was, I have also lighted upon a more perfect Copie, which I intend to offer to the *Publique* in *Second Edition*, that such as have entertained that first offer with liking and acceptance, may finde the benefit of a clearer and fuller satisfaction in that which shall further be imparted unto them. And to the end that *Ingenuity* and *Industry* may want no encouragement, in the mean time accept of these *Enlargements* upon the same Subject, wherein you wil finde diverse other wayes, and no lesse (if not more) profitable, than that which was left by Sir RICHARD WESTON (the Author of the *Brabant-Husbandry*) as a *Legacie* to his Sons, whose *Introduction* to that Discourse, I have here premised to this, to bespeak thee in his words to his Sons, and to gain thy

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affections more fully to these ways of advantaging both thy selfe, and the *Publique*. And I could wish, that God would put it in the heart of those *Worthies* that manage the *Publique Trust*, that by their *Influence* and *Authority*, these and such like *Meanes of Industry*, may not be left wholly to the uncertain, disorderly & lazy undertakings of private men, so as not to have an eye over them, and over that which in their proceedings doth so mainly appeare to be a *Publique Concernment*. Therefore let us all joine to intreat and petition them, that in order to the *Publique* and *Generall Welfare* of this *Common-wealth*, these two things at least may bee thought upon and settled.

1 In respect of the known untowardnes of the major part of the people, who being wonderfully wedded to old customes, are not easily wonne to any new course, though never so much to their own profit, that two or more fit persons of approved skill and integrity may be made *Publique Stewards* or *Surveyors*; one of the *Husbandry*, the other of the *Woods* of this *Common-wealth*, and impowered to oversee and take care of the preservation of what is, and by all good improvement to procure and provide for what is wanting to the present age: and (except some such Expedients be used) it is more then likely will be wanting to succeeding ages.

2 That according to the usual custome of *Flanders*, a Law may be made of letting and hiring Leafes upon improvement; where the manner is, That the *Farmer* covenanteth on his part, to improve the land to such or such a greater Rest, by an orderly and excellent management of *Husbandry*, as well as building. The *Landlord* on the other side covenanteth on his part, at the expiration

of

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of the said Lease, to give so many years purchase of the Improvement (according to the agreement) which is 3 or 4 yeats, or somtimes more, or to give out of it such a parcell or moity of Ground. As if land formerly going for 6.s. an Acre, be upon improvement worth 10.s. or 13.s. 4.d. an Acre. The *Landlord* is to give 4. or 5.s. upon every Acre, more or lesse, according to the agreement. If it please God to blesse these Motions, and that accordingly the *National Husbandry* of this *Common-wealth* be improved; we may hope through Gods blessing to see better dayes, and to be able to bear necessary and *Publique* burdens with more ease to our selves, and benefit to *Humane Society* then hitherto we could attain unto. Which more and more to advance, in reference to a *Publique* and *Universal Interest*, as subordinate to *Higher things*; and whch, though lesse visible and sensible, are more permanent, and to truly *Rationall* and *Spirituall Husbandmen* as perceptible, shall be the unceasant prayers and endeavours of

*Thy faithfull Servant*

Samuel Hartlib.

Sir RICHARD WESTON late of Sutton, in the  
County of Surrey, his Legacie to his Sons, &c. Anno Dom. 1645.  
My Sonnes,

I have left this short ensuing Treatise to you as a Legacy; if I shall not live my selfe, to shew you (what therein is written) by examples, which I know instruct far more than precepts; yet precepts from a dying Father, instructing of his Children what he hath seen and known, and received information of from witnesses free from all exceptions, should make such an impression on them, as at least to believe their Father writ what he thought was true; And therefore suppose those things worthy to be put in practise by them, which he himselfe would have done, if it had pleased God to have granted him life and liberty; especially seeing the matter in selfe, which is required by him to be done, is in shew so profitable, and so easie to be effected, & with so little charge, considering the great gain that is proposed by it, that not any thing can restrain a rational man from triall thereof, but not giving credit to the Relator.

The whole Discourse shews you, how to improve barren & heathy land, & how to raise more then ordinary profit there-of, by such wayes and means as are not practised in England, but as commonly in some parts of Brabant & Flaunders, as the Husbandry of Wheat & Rice is here. By that means you may nobly augment your estates, and will receive so much the more profit & praise, by how with more industry & diligence you govern your affaires: and wil not only be imitated, but also honoured by your Neighbours, when they shall see your labours prosper so far, as to convert barren & heathy ground left un-husbanded for many ages, into a commodious arable land, with Pastures and Meadows, as any be in this Kingdome. And certainly, that man is worthy of praise and honour, who being possessed of a large & barren Demeaine, constraines it by his labour and industry to produce extraordinary fruits; which redounds not only to his own particular

pro-

profit, but also to the Publicke benefit. Cato saith, It is a great shame to a man, not to leave his Inheritance greater to his Successors then he received it from his Predecessors, and that he despiseth the liberality of God, who by slothfullnesse loseth that which his land may bring forth, as not seeming willing to reap the fruits which God hath offered him. Nay, he threatens the crime of high treason, to those that do not augment their Patrimony so much as the Increase surmounts the Principall. It is a thing much celebrated by Antiquity, & thought the noblest way to gather Wealth, for to employ ones Wit & Money upon his Land, and by that means to augment his estate. If you observe the common course of things, you will find that Husbandry is the End, which Men of all estates in the world do point at. For to what purpose do Souldiers, Scholars, Lawyers, Merchants, and men of all Occupations and Trades, toyl and labour with great affection, but to get Money? and with that money, when they have gotten it, but to purchase Land? and to what end doe they buy that land, but to receive the fruits of it to live? and how shall one receive the fruits of it, but by his own Husbandry or a Farmers? so that it appears by degrees, that what course soever a man taketh in this world, at last he commeth to Husbandry, which is the most common Occupation amongst men, the most naturall and Holy, being commanded by the mouth of God to our First Fathers. There is care & diligence requisite in Husbandry, as there is in all the Actions of the World; and therefore as a Captain hath a Lieutenant to command his Souldiers in his absence, or for his ease: So must you provide some able honest man to whom you will commit the execution of such things, as you your selves cannot do without too much labour: whereof you must often take an account, and confer with him (as occasion shall require) about your busynesse, that nothing may be left undone for want of providence. To such a man you must give good wages, with intent to advance your own gain, and take the more ease, by reason of his honesty and knowledge.

You will finde this Husbandry (after you have once had experience of it), to be very pleasing to you, and so exceeding profitable, that

that it will make you diligent: For no man of any Art or Science (except an Alchymist) ever pretended so much gain any other way, as you shall see demonstrated in this ensuing Treatise. The Usurper doubles but his principall, with Interest upon Interest in 7 years; but by this little Treatise, you shall learn now to doe more then treble your principle in one years compass. And you shall see how an Industrious man in Brabant & Flaunders, would bring 500 acres of barren & heathy land, that was not worth at the most above 5.l. a year, to be worth 700.l. a year in lesse time then 7 years. I know no reason why the like may not be done in England, for we are under as good a Climate as they are; Our heathy Land, that is neither Sand nor Loam, is as good a soile as their barren ground is. We have not only Dung to enrich our Land, but also Lime and Marle, of which they know not the use, where they sowe their gainfulest Commodities mentioned in this ensuing Treatise, nor of any other Manure but only Dung. In fine, I am certain there is none of their Commodities but grow in England, as they doe in Brabant and Flaunders, but ours are not of the same kinde, as theirs, nor put to the same use. What cannot be vented at home, may as well be vented from hence into Holland, as the like commodities are from Flaunders thither. I will say no more of this Subject in the Preface: only it remains to tell you, that you must not expect either Eloquence or Method in this ensuing Treatise; but a true Story plainly set forth in the Last Will & Testament of your Father, which he would have you execute, but before all things, to be sure you lay the Foundation of your Husbandry upon the Blessing of Almighty God, continually imploring his divine aid & assistance in all your labours: for it is God that gives the increase: and believing this as the Quintessence and soul of Husbandry, Primum quartite Regnum Dei; & postea haec omnia adjicentur vobis. These things being briefly premised, I will leave the rest to this short ensuing Treatise, and commit you all with a Fathers Blessing to the Protection and Providence of Almighty God.

Thus far Sir RICHARD VVESTONS Introduction to the discourse of  
BRABANT HUSBANDRY; which is shortly to be published in a S-  
econd Edition corrected and enlarged.



## A large Letter concerning the De- fects and Remedies of English Husbandry, written to Mr. Samuel Hartlib.

SIR,



According to your desires, I have sent you what I have observed in France, about the sowing of a seed called commonly, *Saint Feine*, which in English is as much to say as *Holy-Hay*, by reason, as I suppose of the excellency of it. It's called by Parkinson in his *Herball*, where you may see a perfect description of it, *Onobrychis Vulgaris*; or *Cocks head*; because of its flower, or *Medick Fetchling*: By some it is called *Polygala*; because it caufeth cattel to give abundance of milke. The plant most like unto it, and commonly known; being frequently sowne in gardens, is that which is called *French Honey-suckle*, and is a kind of it, though not the same. France although it be supposed, to want the fewest things of any Province in Europe; yet it hath no small want of *Hay*, especially about *Paris*; which hath necessitated them to sowe their dry and barren lands with this seed. Their manner of sowing it, is done most commonly thus: When they intend to let their Corn-lands ly, because they be out of heart, and not situate in a place convenient for manuring, then they sowe that land with *Oats*, and these feeds together about equall parts; the first year they onely mow off their *Oates*, leaving the *Saint Feine* to take root and strength that year; Yet they may if they please, when the year is seasonable, mow it the same year it is sowne; but it's not the best way to do so: the year following they mow it, and so do seven years together; the ordinary burthen is about a load, or a load & a halfe in good years, upon an *Argent*, (which is an 100 square Poles or Rods,

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every

every Pole or Rod being 20 foot) which quantity of ground being nigh a 4th. part less than an *English Acre*; within a league of *Paris*, is usually Rented at 5 or 7 s. After the land hath rested 7 years; then they usually break it up, and sowe it with corn till it be out of heart, and then sowe it with *Saint Foine* as formerly: for it doth not impoverish land, as *Annual Plants* do; but after seven years, the roots of this plant being great and sweet, as the roots of *Licorish*, do rot, being turned up by the Plough, and enrich the land. I have seen it sown in divers places here in *England*; especially in *Cobham-Tark* in *Kent*, about 4 miles from *Gravesend*; where it hath thriven extraordinary well upon dry Chalky banks, where nothing else would grow: and indeed such dry barren land is most proper for it (as moist rich land for the great *Trefoile*) or great *Clover-Graffe* (although it will grow indifferently well on all lands) and when the other grasses and plants are destroyed by the parching heat of the Sun; because their roots are small and shallow; this flourishest very much, having very great root and deep in the ground, and therefore not easily to be excavated; As we have observed *Oenonis* or *Reef-Harrow* commonly to do, on dry lands; but if you sowe this on wet land, the water soon corrupts the root of it. This plant without question would much improve many of our barren lands, so that they might be mowen every year once, at least seven years together, and yield excellent fodder for cattel, if so be that it be rightly managed; otherwise it cometh to nothing, as I have seen by experiance. I therefore counseil those who sowe this, or the great *Trefoile* or *Clover-Graffe*, or any other sort of grasses, that they observe these Rules.

1 That they do make there ground fine, and kill all sorts of other grasses and plants; otherwise they being native *English* will by no meanes give way to the *French* ones; especially in this moist climate; and therefore they are to be blamed; who with one ploughing sowe this or other seeds; for the graffe presently growth up and choaketh them, and so by their negligence, and ill Husbandry, discourageth themselves and others.

2 Let them not be too sparing of their seeds; for the more they sowe, the closer and thicker they will grow, and presently

fully

fully stock the ground, that nothing else can grow. And further the seeds which come from beyond the Seas, are oftentimes old and much decayed, and therefore the more seed is required.

3 Notto expect above 7.years profit by it; for in that time it will decay, and the natural graffe will prevale over it; for every plant hath his period; some in one yeare, some in 2. others in 3. as the common *Thistle*; and therefore after 7. years let them either plough the land up, and sowe it with that same seed again, or with other Graine as they do in *France*.

4 Let not *Sheeps* or other cattel bite them the first year, that they may be well rooted; for these grasses are farre sweeter then the ordinary grasses; and cattel will eat them down, leaving the other; and consequently discourage their growth.

5 The best way, if men will be at the charge, is to make their ground very fine, as they do when they are to sowe *Barly*, and harow it even; and then to howe these seeds in alone without any other grain, as the Gardiners do *Peaſe*; yet not at so great a distance; but let them make the ranges about a foote breadth one from another, and they shall see their graffes flourishest, as if they were green *Peaſe*; especially if they draw the howe through them once or twice that summer to deftroy all the weeds and grasses. And if they do thus, the great *Clover* and other feeds may be mowen even twice the first year, as I have experimented in divers small plots of ground.

There is at *Paris* likewise another sort of fodder, which they call *La Lucern*, which is not inferior, but rather preferred before this *Saint Foine*, for dry & barren grounds; which hath bin lately brought thither, and is managed as the former; and truly every day produceth some new things, not only in other Countreys, but also in our owne. And though I cannot but verily much commend these plants unto my Countrymen, knowing that they may be beneficial to this Nation; yet I especially recommend unto them a famous kind of graffe growing in *Wiltshire*, 19 miles from *Salisbury*, at *Maddington*, which may better be called one of the wonders of this land, then the *Hawthorne-tree* at *Glastonbury*, which superstition made so famous: for divers of the same kind are found elsewhere. You may find this,

grasse briefly described in a Book called *Phytologia Britannica*, (which lately came forth), and set down even all the plants which have been found naturally growing in England, Gram. *Caninum*, *Sepium Longissimum*, which groweth 9 miles from *Salisbury*, Mr. *Tucker* at *Madington*: where with they fat hogs; and which is 24 foot long, a thing almost incredible; yet commonly known to all that shire. Now without question, if the seed of this grasse, be sown in other rich Meadowes, it will yield extraordinarily; though perchance not so much, as in its proper place. I wonder that those that live thereabouts, have not tryed to fertilize their other Meadowes with it: for it is a peculiar species of grasse; and though some ingenious men have found about 90 species of grasses in this Island: yet there is none like to this, that can by any meanes be brought to such an height, and sweetnesse. And truly I suppose, that the thorough examination of this grasse, is a thing of very great importance, for the improvement of *Meadows* and *Pastures*; and it may exceed the great *Trefile*, *Saint Foine*, *La-Lucern*, or any ex*otic* plant whatsoever. And though I am very unwilling to exceed the bounds of an Epistle; yet I cannot but certifie you, wherein the Husbandry of this Nation in other particulars (as I suppose) is greatly deficient, which I will do as briefly as may be; and likewise, how ingenious men may finde Remedies for these deficiencies.

<sup>1</sup> Deficiency concerning Ploughes and carriages. First, he would do the honest and painful Husbandman a very great pleasure, and bring great profit to this Nation, who could facilitate the going of the plough and lighten our ordinary Carriages. I wonder, that so many excellent Mechanicks, who have beaten their brains about the perpetual Motion and other curiosities, that they might finde the best ways to ease all Motions, should never to much as to honour the Plough (which is the most necessary Instrument in the world) by their labour and studies. I suppose all know, that it would be an extraordinary benefit to this Countrey, if that 1, or 2 horses could plough and draw as much as 4 or 6, and further also, that there is no small difference in ploughs, and waggons, when there is scarce any rule for the making them; and every Countrey, yea almost every County, differs not only

in

for the ploughs; but even in every part some with wheels, others without; some turning the *Rift* (as they call it) as in *Kent*, *Picardy* and *Normandy*, others not; some having *Coulters* of one fashion, others of another; others as the Dutch, having an iron wheel or circle for that purpose; some having their *shears* broad at point; some not; some being round, as in *Kent*, others flat; some tying their horses by the tail, as in *Ireland*. So, likewise Waggons and Carts differ: some using 4 wheeles, others 2 onely; some carrying timber on 2 wheels in a Cart, others with 4 wheels, & a long pole onely between, which is the best way; some plough with 2 horses onely, as in *Norfolk*, and beyond seas in *France*, *Italy*, where I never saw above 2 horses in a plough, and one onely to hold and drive: But in *Kent* I have seen 4, 6, yea 12 horses and oxen; which variety sheweth, that the Husband-man, who is ordinarily ignorant in *Mechanicks*, is even at his wits end in this Instrument, v<sup>h</sup>ich he must necessarily use continually. Surely he should deserve very well of this Nation, and be much honored by all, that would set down exact Rules for the making of this most necessary, yet contemned Instrument, and for every part thereof: for without question there are as exact Rules to be laid down for this, as for hipping and other things. And yet in *Shipping*, how have we vwithin these 6 years out-stripped our selves, and gone beyond all Nations? for v<sup>h</sup>ich Art some deserve eternal honour. And v<sup>h</sup>y may we not in this? I know a Gentleman, v<sup>h</sup>o novv is beyond seas, v<sup>h</sup>ere he excels even the *Hollanders*, in their ovn businesse of draining; v<sup>h</sup>o promiseth much in this kinde, and I think he is able to perorme it; I could v<sup>h</sup>wish, he were called on to make good his promise. In *China*, it is ordinary to have waggons to passe up and down v<sup>h</sup>ithout horses or oxen, v<sup>h</sup>ich sail as ships do: and lately in *Holland* a waggon was framed, v<sup>h</sup>ich v<sup>h</sup>ith ordinary sails carried 20 people 60 English miles in 4 hours. I knowv some excellent scholars, v<sup>h</sup>o promise much by the means of *Horizontal* *sails* (viz.) to have 3 or 4 Ploughs to go together; v<sup>h</sup>ich shal likevise both foyve and harrov.

I dare

I dare not being ignorant in these high speculations, engage my self to do much thereby; but wish these gentlemen, whom I know to be extreamly ingenious, would attempt something, both for the satisfying of themselves and others. There is an ingenious *Yeoman of Kent* who hath 2 ploughs fastened together very finely, by the which he plougheth 2 furrowes at once, one under another; and so stirreth up the land 12 or 14 inches deep, which in deep land is good. Neer Greenwich there liveth an *Honourable Gentleman*, who hath excellent Corn on barren land, and yet plougheth his land with one horse, when as usually through *Kent* they use 4 and 6. These things shew that much may be done in this kinde; and I hope some in these active times, vvil undertake and accomplish this wvork of so great importance.

<sup>2</sup> *Deficiencie, about digging of land, Setting and Howing in of corn.*

There is a Book long since Printed, made by Sir *Hugh Plottes*, (the most curious man of his time) called *Adams Art revived*, vwherein is shewed the great benefit vvhich wvould accrue to this Nation, if all land vvhich vvere fit to be digg'd, vvere so ordered, and their corn set. Mr. *Gab. Plottes* likevvise hath vwritten much of this kinde, and promiseth that men shal reap 100 for one; all charges born vvhich are very great. That this may be true, he bringeth some probable Reasons, supposing that lesse then a peck of *wheat*, vwil set an Acre, I dare not promise so much as these *Gentlemen* do, neither can I commend Mr. *Gab. Plottes* setting Instrumenz: For I knovv there are many difficulties in it, vvhich he himselfe could never vvade through; but concerning digging and setting, and howing in of Corne, these things I dare maintaing.

1 That it is a deficiency in *Husbandry*, that it is used no more.

2 That one good digging, because it goeth deeper than the Plough, and buryeth all vweeds, killeth the graffes; is as good as three Ploughings, and if the Land be mellovv, not much more chargeable.

3 That it vwould implovv many 1000 of people, that a third par: of the seed might be saved. As I have found by experience, that all the vweeds and graffes, might be more easilly destroyed thereby, and the ground better accommodated for

for other crops; and to conclude, the crop corſiderably greater. Yet thus much I must further say, concerning setting of Graine. That great *Beans* are even of necessity to be ſet, and that ſmall *Beans* in *Surrey* and other places, are likewife ſet with profit, for the reaſons above mentioned; that to ſet *Peafe* (unleſſe *Haftevers*) *Oates*, *Early*, is a thing even ridiculous: that *Wheat* althoſh in divers grounds it may be ſet with profit: yet to howe it in (as the *Gardiners* ſpeak) as they do *Peafe*, though not at the ſame diſtance, but about a foot the ranges one from another, is better then ſetting, for these Reasons.

1 Because to ſet Corn is an infinite trouble and charge; and if it be not very exactly done, which children neither can nor wil do, and theſe muſt be the chief ſetters; wil be very prejudicious.

2 If worms, frost, ill weather, or fowles, deſtroy any part of your feed, which they wil do; your crop is much im- pared.

3 The ground cannot be ſo well weeded, and the mould raised about the roots by the *howe*. Which 3 inconveniences are remedied by the other way.

Further, I dare affirme, that after the ground is digged or ploughed and harrowed; even it's better to howe *Wheat* in, then to ſowe it after the *common way*; because that the weeds may be eaſily deſtroyed by running the *howe* through it in the Spring, and the mould raised about the roots of the Corne, as the *Gardiners* do with *Peafe*, it would ſave much Corne in dear years, and for other Reaſons before mentioned. Yea, it is not more chargeable; for a *Gardiner* wil howe in an Acre for 5 s. and after in the ſpring for lesse money runne it over with a *howe*, and cut up all the weeds, and raife the mould: vvhich charges are not great, and you ſhal ſave above a bushel of feed, vvhich in dear years is more vworth then all your charges.

Further 1 s. 6 d. an Acre for the ſowing and harrowing of an Acre in *Kent* is accounted a reaſonable price; but if any fear charges let him uſe a *Drill-Plough*. I therefore cannot but commend the *horing in* of *wheat*, as an excellent piece of good

good Husbandry, whether the ground be digged or ploughed ; not only because it saveth much Corne, employeth much people, and it is not chargeable ; but it also destroyeth all weeds, fitteth grounds for after-crops and causeth a greater increase, and in my apprehension is a good Remedy against *Smut* and *Mildew*. There is an Ingenious Italian, who wondereth how it cometh to passe, that if one setteth a Grain of Corne, as *Wheat*, *Barley*, &c. it usually produceth 300 or 400, as I have tryed : yet if you sowe *Wheat* after the ordinary way, 6 or 8. for one is accounted a good crop ; what becometh of all the Corne, that is sown, when as the 50th. part, if it do grow, would be sufficient ? For answer to this.

1 I say, much Corne is sown, which nature hath destinated for the *Hens* and *Chickens*, being without any considerable vegetative faculty.

2 Womes, Frosts, Floods, Crowes and Larkes, (which every one doth not consider) to devour not a little.

3 Weeds, as *Poppie*, *May-weed*, and the grasses growing with the Corne, do destroy much.

Lastly, when Corne is so sowne after the ordinary manner, much is buried in the furrowes ; especially if the ground be graye : much is thrown on heaps in holes, and consequently starve and choake one another. Most of these Inconveniences, are to be remedied by this way of setting and hoving in of Corn.

*3. Deficiencies in Gardening.* Gardening, though it be a wonderfull improver of lands, as it plainly appears by this, that they give extraordinary rates for land, (*viz.*) from 40s per Acre to 9 pouid, and dig and hove and dung their land, which costeth very much ; Yet I know divers, vvhich by 2 or 3 Acres of land maintain themselves and family, and employ other about their ground ; and therefore their ground must yield a vvonderfull increase, or else it could not pay charges ; yet I suppose there are many *Deficiencies* in this calling.

1 Because it is but offevy years standing in *England*, and therefore not deeply rooted. About 50 years ago, about which time *Ingeniosities* first began to flourish in *England*; This

*Art of Gardening*, began to creep into *England*, into *Sandwich*, and *Surrey*, *Fulham*, and other places.

Some old men in *Surrey*, where it flourishest very much at present ; report , That they knew the first *Gardiners* that came into those parts , to plant *Cabbages*, *Colleflowers*, and to sowe *Turneps*, *Carrets*, and *Parsnips*, to sowe *Raish* (or early ripe) *Rape*, *Pease*, all which at that time were great rarities, we having few, or none in *England*, bnt what came from *Holland* and *Flaunder*s. These *Gardiners* with much ado procured a plot of good ground, and gave no lesse then 8 pound per Acre ; yet the *Gentleman* was not content , fearing they would spoil his ground ; because they did use to dig it. So ignorant were we of Gardening in those dayes.

2 Many parts of *England* are as yet ignorant. Within *Gravesend*, these 20 years, a famous Town within lesse then 20 miles of *London*, had not so much as a messe of *Pease* but what came from *London*, where at present *Gardening* flourishest much I could instance divers others places , both in the *North* and *West* of *England*, where the name of *Gardening*, and *Howing* is scarcely known , in which places a few *Gardiners* might have saved the lives of many poor people, who have starved these dear years.

3 We have not *Gardening*-ware in that plenty and cheapnesse (unlesse perhaps about *London*) as in *Holland* and other places, where they not only feed themselves with *Gardiners* ware, but also fat their *Hogs* and *Cows*.

4 We have as yet divers things from beyond Seas, which the *Gardiners* may easily raise at home, though nothing nigh so much as formerly ; for in *Queen Elizabeths* time, we had not only our *Gardiners* ware from *Holland*, but also *cherries* from *Flaunder*s ; *Apples* from *France* ; *Saffron*, *Licorish* from *Spain* ; *Hopps* from the *Low-Countrys* : And the *Frenchman* who writes the *Treasure Poetick* saith, that it's one of the great *Deficiencies* of *England*, that *Hopps* wil not grow,whereas as now it is known, that *Licorish*, *Saffron*, *Cherries*, *Apples*, *Peares*, *Hopps*, *Cabbages* of *England* are the best in the world. Notwithstanding we as yet want many things, as for example:

We want Onions, very many coming to England from Flanders, Spain; Madar for dying cometh from Zurick-Sea by Zealand; we have Red Rose from France; Aise-seeds, Fennel-seeds, Cumin, Caramay, Rice from Italy, which without question would grow very well in divers moist lands in England; yea Sweet Marjoram, Barley, and Grummell seed, & Virgin Aures, though they grow in our hedges in England.

Lastly, Gardening is deficient in this particular: that we have not Nurseries sufficient in this land, of Apples, Pears, Cherries, Vines, Chestnuts, Almonds; but Gentlemen are necessitated, to send to London many hundred miles for them.

Briefly, for the advancement of this ingenuous calling, I only desire, that industrious Gentlemen would be pleased to encourage some expert workmen into the places where they live, and to let them land at a reasonable rate, and if they be poor and honest, to lend a little stock; they will soon see the benefit that will redound, not onely to themselves, but also to all their neighbours, especially the poor, who are not a little sustainted by the Gardiners labours and ingenuities.

<sup>4 Defici-</sup> Our Husbandry is deficient in this, that we know not how to remedy the infirmities of our growing Corne; especially Smut and Mildew, to instance in these two onely, which oftentimes bring great calamities to these Nations: Smut in wet years, Mildew in dry. These distempers in Corne, are not onely in our Countrey; but also in other places. A learned Author saith, that Smutynesse of corne, which maketh it smell like a Red Herring, was not known in France, till about 1530, at which time the great foul disease began to break forth, which he conceiveth from hence to have some original; as also the camp-disease. Mildews are very great in the Kingdome of Naples, which oft stick to the stithes of those that mowe graffe & Corn; and (God be thanked) we are not troubled with Locusts, which is a great flying Graffe-hopper, nor Palmer-worms, which is a kind of great black Cater-piller, nor with great hail in summer, nor with great drought, which stieth the eare in the stalk; which Calamities in hot Countreys, do very oft totally destroy the honest and patient Husbandman's

### Smut and Mildew.

man's labours: neither are we troubled with extreme colds, which in New-England and other cold Countries, do oft destroy the Corne. But to return to our purpose.

And first briefly to shew you my opinion concerning the Causes of Smutynesse: I desire not to fetch Causes afarre off, and to tell you of the sad Conjunctions of Mars and Saturn (for I think Quæ supra nos, belong not to us) when as we have enough at home: This is certain, that there are many evident causes of this corruption of Corn.

1 A moist season about Kerning-time: which moisture either corrupteth the roots of the Plant, or the nourishment of it, or the seed in its Embrio: or perhaps in some measure all these.

2 Low, moist, foggy ground, for the reasons above mentioned.

3 Dung'd land. In Vineyards it's observed, that dung causeth more increase in quantity, but lese in goodness, so that the ill-taste of the dung may easily be discerned; because wine hath an high taste, vwithout question the same happeneth to other Plants, although it be not so easily discerned; for the ferment or ill odour of the dung, cannot be over-mastered by the Plants, as we see also in animals, that corrupt diet causeth unsavory tafts in the flesh: so hogs in New-found-land, where they are nourished by fish, may by their tafts be called rather Sea-porresses then Land-swine.

4 The sowing of Smutty Corne oft produceth Smutynesses; the son like unto the father; I account Smutty Corn an imperfect or sick Graine, and suppose that by a Microscope the imperfection may be discerned.

Lastly, the sowing of the same seed oft on the same field, causeth smutynesse; because that nitrous jisce, vvhich is convenient for the nourishment of the Grain, hath been exhausted in the precedent years; and therefore it is excellent Husbandry every year to change the species of Grain, and also to buy your Seed-Corn, from places farre distant. I am informed of a Gentleman, vvhich did sowe some Wheat vvhich came from Spain, vvhile the Grain is usually very hard and flinty,

and as it vvere transparent, and farre vveightier than ours (as it appeareth by a measure at Amsterdam vwhich holdeth about 3 bushels, and if our *Wheat* in the *Northern* parts vveigheth 160. the *Southern* Corn weigheth sometimes 180, 200, 220;) and had a crop beyond expectation.

The usual Cures of *Smuttynesse*, besides those mentioned before, are these.

1 To lime your ground, which warmth and dryeth the land.

2 To lime your Corns, which is done thus. First, slack your lime, add then moisten your Corne or lime, and stir them together, till your Graine be as big as a small *Pease*. This liming preserveth Corn likewise from birds and worms, and is found a very good *Remedy* against this disease: others make a strong ly wth common salt, and steep their Corn in it all night, and then draw away their ly for further use; which seldome faileth of its desired effect. Whether this strong ly doth by its *corrosiveness*, mortifie the weak and imperfect Corne, so that it will not grow; Or whether it be a *Remedy*, to cure the imperfections thereof, is worth the enquiry? I suppose this ly doth *extirpate* the *superfluous humidity*, which is the cause of this corruption. If Corne be brought into the barn very *Smutty*, in Kent they usufally thrash it on dry floors planked with boards; by which means, the *Smuttynesse* is beaten away, and sticketh not to the Grain, onely a little blacknesse appeareth about the eye, but if it be thrashed on a moist floor, the blacknesse sticketh to the grain, which therefore appeareth dark, and is sold at a lower rate to the Bakers.

*Mildew* is without question an *unctuous* dew, which descendeth from above about *Midsummer*; it aboundeth in dry years, as *Smuttynesse* in moist. I cannot think that there is ordinarily any Malignity in this dew, but it produceth its effect by manifest caules, viz. from an *oily viscous* quality which stoppeth the pores of the husk wherein the *Wheat* lieth, and depriveth it from the Ayre, and consequently from nourishment: for the Ayre is the life of all things. I have heard, and do believe, that if you streak any eare of *Wheat* with *oyl*,

wil produce the same effect. I am sorry that I never tryed, that I might better understand the nature of this sad calamity which often undoeth the Industrious *Husbandman*; and causeth great scarcity in this *Ile*. It is to be observed further, that *wheat* onely suffereth considerable damage by *Mildew*; because it lyeth in a chaffy husk, which other Grains do not. The *Grounds* most subject to *Mildew* are these.

1 Those that are *inclosed* wth trees and high hedges. And truly this is the onely great *Inconveniency* I find by enclosures.

2 *Low Valleys*. I have seen very oft in the same field, the banks fine, bright Corn; and all the *lower* parts, though greater in straw; yet little vworth by reason of the *Mildew*.

3 *Dung* made of straw, I have obserued to dispose much to *Mildew*, and *Sheeps-dung* to be a kind of *Antidote* against it: as also *Pigeons-dung*; because, as I conceive, thefe, 2 last sorts abound much in *Niter*, vwhich produceth a firme, hard, bright Corne, not easily to be putrefied; but the other being more oily and *Sulphureous* causeth a dark *Spungy* Corn, soon corrputible. And 2 because straw is a part in the same kind corrupted, vwhich is alvays in some measure hurtfull to the same species, both in *Animals* and all *Vegetables*, and therefore rotten sticks or the earth proceeding from them, is found hurtfull to the roots of trees; and trees vwill hardly grov, vwhere Roots of other trees have formerly been corrupted.

The *Remedies* for this *Accident*, briefly are these. (Not to speak of *Bees*, vwho questionlesse make most of their *Honey*, from these *Hones* or *Mildews*: for they gather very little, in comparision of that vwhich faileth.)

1 The best vway is to cut dovvn the trees about your ground, and your hedges lowv, that the vwind may *ventilate* your Corn.

2 To sovve early; that your Corn may be full *Kerned*, before these *Mildews* fall. I am informed, that an *Ingenious Knight* in Kent, did for curiositie sovve *wheat* in all moneths of the year, and that the Corn sovvn in July, did produce such an increase, that it is almost incredible; and truly I think it a great

*Chancy*  
*Cultiv*.

great fault in many places that they sow late, for many reasons : I am sure in France, they usually sowe before Michaelmas.

3 Some use (and with good profit) to draw a line over their Corn, and to strike off the *Mildew*, before it be infisfated by the Sun ; This ought especially to be done before sunrising : two then in an hour will easily run over an Acre; the *Mildens* usually fall like a thick fog, or a *Misty raine* ; if you go to your *Bees*, you will soon perceve it by their extraordinary labour, very early in the morning.

4 The use of a kind of *bearded Wheat*, is an excellent *Remedy* : for the beard shoveth off the *dew*, that it doth not so easily insinuate it selfe into the *ear*, and likewise cansthe the *care* to shake by the least wind. There is a kind of *Wheat* in *Buckingham-shire* called *Red-straw-Wheat*, which is much commended : it's a strong-stalked *wheat*, and doth not soon lodge, and therefore excellent for *Rank* land where Corne is apt to lodge, and consequently to *Mildew* ; but I question whether it hath any property against *Mildew*. This I am verily confident of, that if this *wheat*, or any other, were without the Chaffy huskes expos'd bare to the Air ; as *Barly* and *Rie* are, *wheat* would not be afflicted with *Mildew*. Perhaps such Grain may be found by diligent enquiry. I have casually picked out of a *wheat*-field some stalkes, which had 2 ears on them : and though *Barly* usually hath been 2 ranges ; yet I haue seen some sorts wit 4, 6, and there are many great varieties in graines not yet discovered. Truly, if any one knoweth better wayes then these, how to cure this Malady of *Mildew*, he is much to blame, if he do not publish it for the good of his *Countraymen*.

*5 Deficiency concerning the plan-*  
ing and *Inculcations*, which nevertheless is an art absolutely necessary in Planting ; for every book of *Husbandry* doth shew it, and every *Gardiner* can teach it those who are desirous to learn it. Neither will I set down all the sorts of *Apples*, *Pears*, *Plums*, *Cherries*, *Plums*, &c. for it would be too tedious a discourse, and Mr. *Parkinson* hath already very excellently done it, in his

his Book called *Paradisus Terrestris*, where at leasure you may read it. I will onely point briefly at the *Deficiencies*, which I finde in this part of *Husbandry*, and the best wayes to *Remedy* them.

1 I say, that it is a great *Deficiency* in *England*, that we have not more *Orchards* planted. It's true, that in *Kent* and about *London*, and also in *Glocestershire*, *Hereford*, and *Worcester*, there are many gallant *Orchards*, but in other *Countrys*, they are very rare and thinne : but if there were as many more, even in any *Country*, they would be very profitable. I know in *Kent*, that some advance their ground even from 5 s. per *Acre* to 5 pound by this means, and if I should relate, what I have heard by divers concerning the profit of a *Cherry-Orchard*, about *Sittenburne* in *Kent*, you would hardly believe me ; yet I have heard it by so many, that I believe it to be true: Namely ; that an *Orchard* of 20 Acres of *Cherries*, produced in one year above a 1000 pound, but now the trees are almost all dead ; it was one of the first *Orchards* planted in *Kent*. Mr. *Camden* reporteth, that the *Earl of Leicester*'s *Gardiner* in *Queen Elizabeth's* time, first began to plant *Flemish Cherries* in those parts ; which in his time did spread into 16 other *Parishes*, and vvere at that time sold at greater rates then now ; yet I knowv that 10 or 15 pound an *Acre* hath been given for *Cherries*, more for *Pears*, and *Apples*.

2 There is a great *Deficiency* in the ordering of *Orchards*, in that they are not well pruned, but full of *Moss*, *Mistress*, and *Suckers*, and oftentimes the ground is packed too thick of trees ; for they shoule stand at least 20 foot asunder ; neither vwill ill husbands bestowy dunging, digging, or any other cost on *Orchards*, vvhich if they did, might pay half their rents in some places. One told me for a secret, a *Compositio-*  
n for to make Trees bear much and excellent fruit, vvhich vvas this : First, in an old tree, to *split* his root ; then to apply a *Compost* made of *Pigeons* dung, *lees* of *wine*, or stale *Urine*, and a little *Brimstone*, (to destroy the vwormes.) it hath some probability of truth : for by experience I knowv that a bushell of *Pigeons*-dung hath caused a tree to grov and bear,  
vvhic h

vvhich for divers years before stood at a stand ; but concerning the *splitting* the roots, I know not what to say. Some old *Authours* affirm this ought to be done ; because that the roots may as well be hide-bound, as other parts of the tree, and not able to attract their nourishment, and when the Root is split, it will speedily send forth divers small fibrous roots; which are the principall *Attractors*. It were good that some vwould give us an account exact of this *Experiment*. But some wil object against *Orchards*, that they spoil much ground, and therefore ought to be planted onely in *bedges*. To this I answer.

1 That *Plumtrees* and *Damsins* may very well be planted in *hedges*, being ordinarily thorny plants ; this is used very much in *Surrey* and *Kent*, where the *Plums* usually pay no small part of their Rent ; yet I never saw in these *Southern* parts of *England*, any *Apples* or *Pears* thrive in an *Hedge*, unleesse a *Crab* or a *Wilden*, or some *Sweeting* of little worth. How they thrive in *Hereford-shire* and thole places, I knowv not.

2 The *Inconveniences* of *Orchards* planted at 20 or 30 foot distance, is not worth speaking of : for this is the usual course in *Kent*, when they plant any ground, they exactly place them in rank and file, and then plough their lands many years, and sowe them vvit Corn, till the *Orchard* beginneth to bear fruit ; then they lay them down for *pasture*, which *pasture* is not considerably *soure* ; but hath this advantage above other *Pastures*.

1 That it is sooner grown by 14 dayes in the spring than the *Meadows*, and therefore very serviceable.

2 In *Parching Summers* here is *plenty*, when other places have *scarcity*.

3 They are great shelters for Cattle, especially *sheep*, who will in those places, in great snowes scrape up meat, which in other places they cannot do : and if the pasture were *soure*, yet the losse is not great ; for it will be a convenient place for the *Hogs* to run in, who must have a place for that purpose, where there are no *Commons*.

4 I say, that the *Benefits* are so many by *Orchards*, that you ought like an ungrateful man to thrust them up to the hedge: for they afford curious walks for pleasure, food for Cattle, both in the Spring early, and also in the *parching Summer*, and *nipping snowy Winter*: They afford fuel for the fire, and also shadess from the heat, physick for the sick, refreshment for the sound, plenty of food for man, and that not of the worst, and drink also even of the best, and all this without much labour, care or cost, who therefore can justly open his mouth against them ?

3 *Deficiency* is, that we do not improve many excellent Fruits, which grow amongst us very well, and that we have as yet many fruits from beyond Seas, which will grow very well with us. I passe by the generall and great Ignorance, that is amongst us, of the variety of *Apples*, of which there are many sorts which have some good and peculiar uses; most men contenting themselves with the knowldg of half a score of the best, thinking the vertues of all the rest are comprehended in them : as also of the variety of *Pears*, which are incredibly many. A *Friend* of mine near *Gravesend*, hath lately collected about 200 species. I know another in *Essex*, (*Mr. Ward*) who hath nigh the same number. I hear of another in *Worcester-shire*, not inferiour to these. In *Northampton-shire*. I know one, who hath likewise collected very many. So that I dare boldly say, there are no lesse in this *Island* then 500 species ; some commended for their early ripenesse ; some for excellent taftes ; some for beauty ; others for greatnesse ; some for great bearers ; others for good Bakers ; some for long lasters, others for to make *Perry*, &c. But to our purpose: I say many rare fruits are neglected; to instance.

1 In the *Small-nut* or *Filbird*, which is not much inferiour to the best and sweetest *Almonds*.

2 The great *Damsin* or *Pruin-plum*, which growtheth well and beareth full in *England*.

3 *Almonds*, which growtheth well and beareth good fruit, as I have seen divers bushels on one tree in my Brothers *Orchard*.

4 *Walnuts*, which is not a fruit to be despised.

5 *Vines* and *Mulberries*, but of these presently in another place. I might likewise adde *Currants*, *Raspes*, of which excellent drinks may be made.

6 *Quinces*, of the which I cannot but tel you that a Gentleman at Prichenele in Essex, who had a tree from beyond Sea, hath the best in England, and hath made above 30 pound of a small piece of ground planted with them, as I have heard from his own wifes mouth. And therefore it is by reason of our ill Husbandry, that we have *Quinces* from *Flaunders*, *Small-nuts* from *Spain*, *Pruins* from *France*, and also *Walnuts* and *Almonds* from *Italy*, and *Chestnuts* (which I had almost forgot) from *Portagall*. And now I cannot but digresse a little, to tell you a strange and true story, with my opinion of it. In divers places of Kent, as at and about *Gravesend*, in the Countrey and elsewhere, very many of the prime Timbers of their old barnes and houses are of *Chestnut-wood*, and yet there is scarce a *Chestnut-tree* within 20 miles of that place, and the people altogether ignorant of such trees. This sheweth that in former times those places did abound with such timber; for people were not so foolish surely in former times to runne up and down the world, to procure such huge mastey timbers for barnes and such buildings when as there was plenty of *Oakes* and *Elmes*, at their doors: And further, it sheweth, that these Trees will grow again withus to a great bignesse. This putteth into my mind the story of the *moore-logs*, which are found in divers places of the *North of England* in moore many foot deep; which logs are long and black, and appear to be a kinde of *Firre* or *Pine*; and yet in those places, people are altogether ignorant of these Trees, the Countrey not producing any of these species. The first story of Kent, which I know to be true, causeth me to wonder the lesse at the latter: for I see that a species of wood, may be destroyed, even totally in a place. And

2 I know, that in *Virginia* and *New-England*, that *Pines*, and *Firres* and *Cedars* do grow wonderfully thick in such *Mores* or *Swamps*, and being light wood, and easilly wrought, they

they are continually used, while they last, for buildings. Further, I suppose these *Mores* are *Commons*, to the which the poor have used to resort for firing, & how soon great woods will be consumed by them, every one making what havock he pleaseth, all men know. As concerning their being so deep in the ground, the blacknesse; I suppose that when wood was abundant in those places, every one did cut what they pleas'd, and left what was not for their turnes, which being in moist places, was soon glutted with moisture, and made ponderous; by which means it soon buried it self, as ships do, on quicksand, or perhaps the *turf* (which hath a peculiar faculty vegetative, for where it is exhausted, it soon groweth again) in time hath grown over them; the people permitting it, because that wood, once *sobbd* in wet, is of little use, as we see by *Piles* on the *marshes*-side, scarce any man vouchsafing to carry them home. The blacknesse of this wood proceedeth, as I suppose, from the footy fume, or evaporation of the black *turfe*, (which endeavoureth, as all earths do, to reduce all things into its own nature; which though it be not able fully to accomplish; yet it introduceth divers dispositions, and qualities, as blacknesse in the wood. Some suppose, that these *moore-logs* have laine there ever since the *flood*, with whom I will not contend; seeing that any wood, if it be kept from the Aire continually moist or dry, will endure even thousands of years without putrefaction.

6 *Deficiency*, is the *Not-improving* of our *Fruits* for the <sup>The 6 def-</sup> best ends and purposes. *Normandy*, which produceth but lit- <sup>lency con-</sup> tle wine, maketh abundance of *Cider*, *Perry*, which they esti- <sup>cerning not</sup> mate equally to wine, if it be made of good fruit. The ordi- <sup>improving</sup> *Perry* is made of *Chaulky Pears*, very juicy, which grow along by the high-way-sides, which are not to be eaten raw. In *Biscay* in *Spain*, where wine is scarce, they make *Cider* of a certain sweet *Apple*, which hath a little *bitternesse* in it, and is like to our *Snouting*, and the *Cider* is very good. And truly here in *England*, if we would make *Cider* and *Perry* of the best sorts of Fruits, which is rarely done, (for we think any fruit good enough for that purpose) we might make drincks,

no wayes inferiour to the *French wines*, which are usually spoiled before they come over the seas to you, their spirits soon evaporating. There are two wayes of making *Cider* and *Perry*: one, by bruising and beating them, and then presently to put them into a vessel to ferment or work (as it is usually called) of themselves: The other way is to boil the juice with some good *spices*, by which the rawnesse is taken away, and then to ferment it with some yeast, if it work not of it self, this is the best way: and I have tasted *Cider* thus made of an excellent delicate taste. Neither let any complaince of the vvindiness; for it is onely vvant of use: When I had for 2 or 3 years continually drunk *wine* beyond Sea, the strongest beer for 2 or 3 vveeks vvas as vvindy to me, as *Cider* vwill be to any; and aftervvards vwhen I vwent to *Paris*, the wine of that place vvas as troublesome as *English beer* for a little time: howv much vvine might be saved, and also malt if *English-men* did take these good courses, vvhich other *Nations* do, and consequently how much advantage vvould this *Island* reap theraby? If I were an house-keeper in the Country, I would make excellent *Beer*, *Ale*, *Cider*, *Perry*, *Methbeglin*, *Wine*, of our own *grape*, and if my Friends vvould not drink these, they should drink water, or go away a thirst: I vwould scorn to honour *France* so much as men do ususly; and the *Spaniard* and *Italian* shoule not laugh at us, and say that vve can as vvell be vvithout bread, as their *wines*, *Currants*, &c. Thus may many other excellent *drinks* be made out of our *Fruits*: not to speake of thoſe which are made of our *Grain*, as *Barly*, *Wheat*, &c. yet I must tell you, that I knowv an *Ingenious* man, vwho can vvithout malting *Barly*, make a *drink* not inferior to *wine*, and a greater quantity of *Aqua-vita* out of them, and vwith lesse cost, then by the ordinary vvay, by a peculiar fermentation of his ovvn; vvhich time vwill discover. There is another *Ingenious* man, vwho out of *Damsins* and other fat and fyveyt *plums*, can make a *drink* not inferior to the best *wines*, and abundance of *Aqua-vita*. Many *Ladies* knowv howv to make *Cherry*, *Rapese-vvines*; and Sir *Hugh Platies* in his *Cloſet for Ladies*, discloſeth many ſecrets of this kind;

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as alſo for *Conſerves*, *Marmalades*, which are things both deſightfull and profitable. I have a kinsman, who can even out of *black-berries*, make a very pleafant *drinke*, which curioſity he is unwilling to publith. *Glauber* an excellent *Chymift* hath diuers ſecrets of this kind, even to the advancing of *Hawes*, *Hips*, *Canker-berries*, *Slopes*, to excellent *Aqua-vita's*, *drinckes*, *vinegers*, which he himſelf firſt invented. In *Raffia* in the ſpring-time, it's an uſuall cuſtome to pierce the barke of the *Birch-trees*, which at that time will weep much *liquor*, and *Helmont*. yet like children be little the worse; this the poor ordinary drink for neceſſity, it's a pleafant healthfull drink; and alſo to the rich men, because it's an excellent preſervative againſt the ſtone.

The meaneſ to advance this profitablie and pleafant work are theſe.

1 To advance *Nurcerie* of all ſorts of *Apples*, *Pears*, *Plums*, *Cherries*, which *Gentlemen* may do for a fmal matter, and then plant out theſe trees, when they are grown great enough. The beſt and cheapeſt wayes to raife all *Nurcery* wares, is done thus: *Plums* may be raifeſ either of *ſtones*, which when you haue eaten the *plums*, may be preſently pricked into the ground, or by *Slips*, which you wil finde about the old trees. *Apples* may be raifeſ for *Kernels* (*Crab-Kernels* are the beſt): vvhich ought to be preſerved in dry ſand, til the ſpring, leaſt they growv mouldy: or *Crab-ſtalke* may be fetched out of the vwoods, and grafted. Some Trees as *Sweetings*, *Codlings*, *Quinces*, vwil growv very vvel of *ſlips*. *Cherries* are very vvel raifeſ by *ſtones*, (the *Black-Cherries* are the beſt, vvhich fo ſoon as you haue eaten them, are to be hooven into Beds made very fine, the ranges a foot diſtant; bevvare leaſt you let them heate, and take heed of the moufe. I haue feen *Cherry-ſtones* and *Apple-kernels* growv 2 foot and a halfe in one year; and conqeuntly in fevyr years they vwould be fit to be tranſplanted. The *Art of Grafting, Inoculating* a Gentleman vwil learn in two hours.

2 For the advancing of *Ingeniuities* in this kind, as that ma-king of *Vinous-Drincks* out of *Apples*, *Plums*, &c. I counſel all.

all Ingenuous Gentlemen to try divers experiments in these kinds; with these Cautions.

1 That he attempt not great quantities at first, which per chance will be chargeable and troublesome; for by a gallon he may have as much certainly, as by a hogshead.

2 Not to be discouraged, if they succeed not wel at first dash: for certainly there are many Ingenuities in these fruits which time wil discover.

3 Proceed by fermentation: for every liquor which will ferment, hath a vinous spirit in it, and without fermentation even the best fruits wil have none.

Lastly, fermentation is done either in liquido, or humido; and herein consists some Mystery. I have forgot to speak of Apricocks, Peaches, Melicottors, which are fine pleafant fruits, yet very dangerous; and therefore called by the Italians, Mazzofrancesc, that is, Kill-Frenchman; and wish Ladies, and others to take heed of surfeiting by these and some other dangerous plums.

The 7 deficiency concerning Vines.

I cannot without much tediousnesse, relate the diverse sorts of Vines, which are even infinite; Rome having in it usually, 40 or 50 sorts of Vines; and all very good: Other places of Italy, Spain and France, have also great varieties; I therefore passe them by, as also the manner of managing them, because it is described in the Country-Farme, and also by Bonovil a Frenchman, who at the command of King James, wrote a short treatise of Vines and Silkworms, for the instruction of the plantations of Virginia. I shall onely according to my method shew you the Deficiencies amongst us in this particular plant, and the best Remedies for it.

And first, although I think that the wine is the great blessing of God, which Hot Countreys especially enjoy, as temperate Countreys do Milk, Butter, Cheese in abundance, and the coldest and Barrennest Fowl, and Fish in an incredible number; God of his goodness distributing some peculiar blessings to every Countrey; Notwithstanding I dare say, it's probable, that Vineyards have formerly flourished in England, and that we are to blame, that so little is attempted

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to revive them again. There are many places in Kent calle<sup>d</sup> by the names of Vineyards, and the grounds of such a Nature, that it seemeth probable, they have been such. I hear further by divers people of credit, that by records it appeareth, that the tithes of wine in Gloucestershire was in divers Parishes considerably great; but at length Gascony coming into the hands of the English, from whence cometh the most of the strong French Wine, call'd high-Country wine, and customes being small, wine was imported into England from thence, better and cheaper then we could make it, and it was thought convenient to discourage Vineyards here, that the greater trade might be driven with Gascoine, and many ships might finde imployment thereby.

Some fond Astrologers have conceited, that the earth being grown older, and therefore colder hath caused the sun to descend many degrees lower to warm and cherifh it, and one argument which they bring for this opinion is, that Vines and Silkworms are found in those Countreys, wherein former times they were unknown: But if these fond men had considered the good Husbandry in these times, with the bleffing of God on it, they had not run into such foolish imaginations. This is true indeed, that the Roman souldiers, who had Alsatia given them to live in, which is one of the best and most Southern places of Germany, mutined, because they thought it so cold, that Vines should not grow there, and that therefore they should be deprived of that delectable liquor; whereas we find at this prefent day Vines flourishing many hundred miles more towards the North, both in France, Lorraine and Germany; and that they are crept down even to the latitude of England, for the Rhenish-wines grew within a degree of the West-Southern places of this Isle, and Paris is not two degrees South of us, yet Vines grow three score miles on this side Paris, as Beaumont; yea the Vines of these places are the most delicate; for what wine is preferred before the neat Rhenish, for Ladies, and at table; and truly in my opinion, though I have travelled twice through France; yet no wine pleased me like Vin D'ache and of Paris especially about Rueill,

Ruill, which is a very fine brisk wine, and not fuming up to the head, and Inebriating as other wines: I say therefore that it is very probable, that if Vines have stepped out of Italy into Alsatia, from them to these places, which are even as farre North as England, and yet the wines there are the most delicate, that they are not limited and bounded there. For a 100 miles more or lesse causeth little alteration in heat or cold, and some advantages which we have will supply that defect. But not to insist too long on probabilities, I say, that here in England some Ingenious Gentlemen usually make wine very good, long lasting, without extraordinary labour and costs. To instance in one, who in great Chart, in the Wilds of Kent, a place very moist and cold, yearly maketh 6 or 8 hogs-heads, which is very much commended by divers who have tafted it, and he hath kept some of it two years, as he himself told me, and it hath been very good; Others likewise in Kent do the same: and lately in Surrey a Gentle-woman told me, that they having many grapes, which they could not well tell how to dispose of, she, to play the good House-wife, stamp'd them to make verjuice; but two moneths after drawing it forth, they found it very fine brisk wine, clear like Rock-water, and in many other places such experiments have been made. I therefore desire Ingenious men to endeavour the raising of so necessary and pleasant a commodity; especially when French wine is so dear here, and I suppose is likely to be dearer; I question not, but they shall finde good profit and pleasure in so doing, and that the State will give all encouragements to them: and if the French wine pay excise and customes, and the wines here be toll-free, they will be able to affoord them far cheaper, than the French can theirs, and supply the whole Isle, if they proceed according to these Rules.

1 To choose the best sorts of grapes, which are most proper for this Isle, and though there are many sorts of grapes amongst Gardiners, yet I commend four sorts especially to them; and I desire that they be very carefull in this particular: for it is the foundation of the work; if you fail in this, you

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Sir Peter  
Ricard.

fail in all; for I know that Burdeaux-Vines bear very great grapes, make verjuice onely at Paris, and that the tender Orleans-Vine doth not thrive there.

The first sort is the Parsley Vine or Canada-grape; because it first came from those parts, vwhere it growveth naturally; and though the Countrey be intollerably cold; yet even in the vwoods vwithout manuring, it so farre ripeneth his fruits, that the Jesuits make wine of it for their masse; and Racine (vwhich is the Juice of the grape newlly exprest, and boiled to a Syrup, and is very syweet and pleasant) for their Lent-provision, as you may read in their Relations: and this Vine seemeth to be made for these Northern Countreys, because it hath its leaves very small and juicy, as if it vvere on purpose to let in the sun, and it ripeneth sooner than other grapes, as I have obserued in Oxford-Gradis,

2 Sort of Vine is the Rhenish-grape; for it growveth in a temperate Countrey, not much hotter in summer then England; and the wine is excellent as all knovv.

3 Sort is the Paris-grape; vwhich is much like the temper of England, onely a little hotter in summer: this grape beareth a small bunch close set together, very hardy to endure frosts and other inconveniences, and is soon ripe; so that the vintage of Paris, is sooner ended then that of Orleans or Burdeaux; and though it be not so delicate to the taste, as some other grapes; yet it maketh an excellent brisk wine.

4 Sort is the small Muscadell; vwhich is a very fine pleasant grape, both to eat and to make wine. In Italy it usally growveth against their houses vwalls, and of this they make a small pleasant wine, a moneth or two before the ordinary Vintage. It is a tender plant in respect of the other Vines in the fields: these Vines I knovv are the most convenient for this Isle; because they bear small bunches, and grapes soon ripen, and are hardy to endure frosts and ill weather.

2 To choose convenient places. For this end, I counsell them, First, to plant Vines on the South-side of their dwelling houses, Barnes, Stables, and Out-houses. The Gentleman of

*Kent*, whom I mentioned before, useth this course: and to keep the *Vines* from hurting his tiles, and that the *wind* may not wrong his *Vines*, he hath a frame made of poles, or any kinde of wood, about a foot from the tiles, to the which he tyeth the *Vines*; by this meanes his *Vines* having the reflextion of the yard, sides of the houses, and tiles do ripen very well, and bear much; so that one old *Vine*, hath produced nigh a hogs-head of *wine* in one year: and I wish all to take this course; which is neither chargeable, nor troublesome, but very pleasant; and if all in this *Island* would do thus, it's incredible, what abundance of *wine* might be made, even by this petty way.

2 If that any *Gentleman* will be at the charge of making a *Vineyard*, let him choose a fine sandy warm hill, open to the *South-east*, rather than to the *South-west*: for though the *South-west* seemeth to be hotter; yet the *South-East* ripeneth better, as I have seen in *Oxford Garden*; because the *South-east* is sooner warm'd by the sun in the morning; and the *South-west* winds, are the winds which blow most frequently, and bring raine, which refrigerate the plants: and such a place is very requisite; for in other places *Vines* do not thrive, even in *France*: for if you travel betwixt *Paris* and *Orleans*, which is above 30 leagues, yet you shall scarcely see a *Vineyard*, because it is a plain *Champian-Country*. So likewise betwixt *Fontarabia* to *Burdeaux*, in the *Southern* parts of *France*, for an 100 miles together; because the land is generally a barren sandy plaine, where only *Hearthounds* and *Pine-trees*, out of which they make *Turpentine* & *Rozin*, by wounding of them; and *Tarre* & *Pitch*, by the burning of them: and if any finde such a fine warm hill, and do dung and fence it well, he hath a greater advantage of most of the *Vineyards* of *France* by this conveniency, than they have of our *Isle*, by being a hundred miles more *South*; for most of their *Vineyards* are in large fields not enclosed, on land that is stony, and but indifferently warme. But some wil say, that the wet weather destroyes us. It's true, that the wet will destroy all things; *Sheep*, *Corn*, &c. yet no man will say, that therefore *England* will not produce and nourish these

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tures; and if extraordinary wet years come, they spoil even the *Vines* in *France*: but take ordinary years and our moisture is not so great, (though some abuse us, and call *England matula Cali*) but the *Vines*, especially those I have mentioned before, will come to such perfection as to make good *wine*: and if extraordinary raines fall; yet we may help the immaturity by *Ingerinity*, as I shall tell you anon: or at worst make *vinegar* or *verjuice*, which will pay costs.

Further these advantages we have of *France*.

1 This *Isle* is not subject to nipping frosts in *May*, as *France* is; because we are in an *Isle*, where the *Air* is more grosse than in the *Continent*; and therefore not so piercing and sharpe, as it plainly appeareth by our *winters*, which are not so sharp as in *Padua* in *Italy*: neither are we subject to such stormes of *hail* in *summer*, which are very frequent in *hot Countries*, and for many miles together do spoil their *Vines*, so that they cannot make *wine* of the *grapes*: for those *grapes* which are touched by the *hail*, have a *Sulphureous* and a very unpleasante taste, and only fit to make *Aqua-vite*. Further, sometimes in *France*, caskes for their *wines* is so dear, that a *tun* of *wine* may be had for a *tun* of *cask*: and the *custome* and *excise* which is laid on *wines* here, is as much again as the poor *Vignerons* in *France* expects for his *wine*. Not to speak of the ill managing of their *Vines*, especially about *Paris*, where poor men usually hire an *Acre* or 2 of *Vines*, which they manage at their spare hours, and most commonly pack in so many plants on their ground, for to have the greater increase, that the ground and *Vines* are so shaded by one another, that I have wondered, that the *Sun* could dart in his beames to mature them; and therefore I cannot but affirm again, that we may make abundance of *wine* here with profit, the charges of an *Acre* of *Vinyard* not being so great as of *Hops*: an hundred sets well rooted, at *Paris* cost usually but 4 or 6 *sous* or pence, where I have bought many: 100 wil plant an *Acre* very well, & 10 a year is the ordinary rate for the three diggings with their crooked *Instrument* called *vantage*, and the increase usually four tuns for an *Acre*, which will be pro-

fit enough: and though I referre all to *Bonovil* and others, who have written of the managing of *Vines*; yet I counsell to get a *Vignerion* from *France*, where there are plenty, and at cheaper rates than ordinary servants here, and who will be serviceable also for *Gardening*.

2 I will briefly tell what I have seen. In *Italy* through all *Lombardy*, which is for the most part plain and *Champian*, their *Vines* grow in their *hedges* on *Walnut-trees*, for the most part: in which fields, they speake of three harvests yearly, viz.

<sup>1</sup> *Winter-Corn*, which is reaped in *June*, &c.

<sup>2</sup> *Vines* and *Walnuts*, which are gathered in *September*.

3 Their *summer-graines*, as *Millet*, *Panicle*, *Chiches*, *Vetches*, &c. *Buck-wheat*, *Framentone*, or that which we call *Virginia-wheat*, *Turneps*, which they sowe in *July* when their *Winter-corne* is cut and reaped, they reap in *October*. In *France*, their *Vines* grow ~~the~~ manner of wayes; in *Provence* they cut the *Vine* about two foot high, and make it strong and stubbed, like as we do our *Cisiers*; which stock beareth up the branches without a *prop*.

2 About *Orleans*, and where they are more curious, they make frames for them to run along.

3 About *Paris* they tye them to short poles, as we do hops. In *France* they usually make trenches, or small ditches, about three or four foot from one another, and therein plant their *Vines*, about one and a half deep, which isa good way, and very much to be commended; but if we here in *England*, plant *Vines* as we do *Hops*, it will do very well, but let them not be packt together too thick, as they do in *France* in many places, least they too much shade the ground, and one another. In *Italy* when they tread their *grapes* with their feet in a cart, they poure the juice into a great vessel or *Fat*, and put to it all their husks and stones which they call *grapse*, and let them ferment, or (as vve say) *work* together 12 or 14 dayes, and usually they put one third of water to it, this maketh a *wine* lesse furious, *Garbo* or rough, and therefore a good stop-

*Stomack-wine*; but it spoileth the colour, and taketh avay the pleasant brisk taste. In *France* so soon as they have preffed out their liquor with their feet, they put it in hogsheads, and after in their preffe squeeze out vvhath they can, out of the *grapse*; which serveth to fill up their hogsheads while they worke, which is usually three or four dayes, and then stop them close: this is also the way used in *Germany*, and is the best, for it maketh a fine gentle *wine* with a curious colour. In *Germany*, when their *grapes* are green, they make fire in their sellars in Stoves, by the which means, their *wines* worke extraordinarily and do digest themselves the better: This course we must also take here in *England* some years; for it helpeth the rawnesse of all liquours very much. There is an *Ingenious Dutchman* who hath a secret, which as yet he wil not reveal, how to help *maturacion* by a *compost* applied to the roots: The *compost* which I have spoken of before, made of *brimstone*: *Pigeons-dung*, is very excellent for that purpose, *Gluber*, as also *tees of wine*, *bloud*, *lime* used with moderation. He also knowveth how to make *soure grapes* produce *good wine*; I suppose his vway to be this, all juice of *grapes* newly expressed is fveet, and vvhich may by it selfe alone be made into a *sweete syrupe*, vvhich the *French* call *Racine*: further in the *Evaporation* of *liquors*, vvhich have not fermented or vvrrought, the watery part goeth away first.

3 *Fermentation* giveth a *vinous* taste, and maketh a liquor full of spirits.

You may then easily guesse at the way, and perhaps he may adde also some *sugar* and *spices*, as the *Vintners* do when they make *Hippocras*. I know a *Gentleman*, who hath made excellent *wine* of *raisins* well boild in water, and afterward fermented by it selfe, or with barme, its called usually *Medea*. I likewise know, that all sweet and fatty *fruicess* will make fine *vinous Liquors*, as *Damfins*, if they be wrought or fermented ingeniously: but who soever goeth about such experiments, let him not think that any thing is good enough for these purposes; but let him use the best he can get: for of naughty *corrupt* things, who can expect that which is excellent and delicate.

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The Deficiency of us in this kind is so obvious, that all the world takes notice of it, and it is (next the neglect of *fishing*) the greatest shame to this Nation; for all know that we have as good land for these seeds, as any can be found in *Europe*; and that the sowing of them requireth neither more labour, cost or skill than other seeds. And further that the materials made from these are extreamly necessary: for how miserable should wee be without *Linnen*, *Canvases*, *Cordage*, *Nets*? how can we put our *Ships* to Sea, which are the *bulwarks* of this *Ile*? And yet we are necessitated to have these Commodities from those who would destroy (I will not say the Nation, but I may boldly say) our *Shipping*, and *Trade*. I hope that this wil more seriously be considered by those at the *Helme* of our State. I will freely and plainly relate, how this Deficiency may easily be Remedied according to my judgment.

1 To compel by a law, that all *Farmers*, who plough and sowe 50 or 100 Acres of land, should sowe halfe an Acre, or an Acre of *Hemp* or *Flax*, or to pay 5 s. or 10 s. to the poor of the Parish where they live, or some law to this purpose; for there is no man but hath land fit for one of these, *Hemp* desiring a stiffe land, *Flax* that which is light.

For there is so much irrationality in some professions that they must be forced even like brutes to understand their own good. In *King Edward* the 6 days somthing was enacted to this purpose, as I am informed. In *Henry* the eighth days, there was a law enacted that every man should sow his lands, and that no man should enclose his lands, least he should turne it to *Pasture*; for we have had great dearth in *England* through the neglect of *Tillage*; which lawes even as yet stand in force; yet there is, nor needeth there be any force to compel men to till and sowe their lands; for they have at length found the sweetnesse, and willingly go about it for their own profits sake, and now we suppose (and not wwithout cause) that *Enclosing* is an *Improvement*: and so concerning *Hemp* and *Flax*, I say, if they were once accustomed to sowe them, they wwould never leave it, as I see *Farmers* do in *East-Kent*; scarce

scarce a man but he will have a considerable plot of ground for *Hemp*, and about *London* farre greater quantities of *Flax* is sown then formerly.

2 It were convenient, that every Parish through the Nation should have a stock to set their poor to work, that the young children and women might not run up and downe idle, and begging or stealing (as they do in the *Country*) of *Apples*, *Pease*, *Wood*, *Hedges*, and so by little and little, are trained up for the *Gallows*.

3 That a severe law should be enacted against those who run up and down and will not worke: for if all know, that they may have work at home, and earne more within doores honefly, then by running rogueing up and down, why should they not compell them to it? and though some may think the Parishes will lose much by this way; because that the stock wrought will not be put off, but with losse, as perhaps 10 l. will be brought to 8 l. yet let them consider how much they shall save at their doors, how many inconveniences they are freed from; their hedges in the *Country* shall not be pulled, their fruits stolne, nor their Corne purloined; and further, that the poor will be trained up to worke, and therefore fit for any ser-  
vice: yea and in their youth, learn a calling by the which they may get an honest livelyhood; and I dare say, their Assessements for the poor, wwould not be so frequente, nor the poor so numerous: and the benefit which redounds to the *Nation*, wwould be very great.

4 The charitable deeds of our forefathers, ought to be enquired after, that they be not misplaced, as usually they are, but be really bestowed for the good of the poor, that are laborious (as in *London* is begun) and if there be any that will not work, take *Saint Pauls* rule, who best knew what was best for them. I dare not advise to take in part of *Commons*, *Fens*, &c. and to improve them for this use, least I should too much provoke the rude mercileſe multitude. But to return to my discourse. I say, that sowing *Hemp* and *Flax*, will be very beneficiall.

5 To the Owners of land: for men usually give in divers pla-

places 3 l. per Acre, to sowe *Hemp* and *Flax* (as I have seen at *Maidstone* in *Kent*, which is the only place, I know in *England* where *thread* is made : and though nigh a thousand hands are employed about it ; yet they make not enough for this *Nation*,) and yet get good profit. How advantageous will this be to those who have drained the *Fens*, where questionlesse *Hemp* will flourish, and exsiccate the ground. (for *Hemp* desirereth stiffe moist land, as *Flax* light and dry,) and likewise to those in the *North* of *England*, where land is very cheape ? I hope in a little time *Ireland* will furnish us with these commoditises, if we be idle ; for there land is very cheap, and those seeds need no inclosure ; for cattle will not touch them, neither doth it fear the plunderer, either in the field or barn.

2 It's profitable to the sower. I know that they usually value an Acre at 10 or 12 l. which costeth them usually but half the money. Whether there be *Flax*, that will yield 30 or 40 l. per Acre as some report, I know not.

3 To the place where it is sown ; because it sets many poor to work. I wish it were encouraged more in the *North* than it is ; because there is many poor, who could willingly take pains, and though spinning of linnen be but a poor work ; yet it is light, and may be called *Womens recreation*, (and in *France* and *Spain*, the best *Citizens wives* think it no disgrace to go about spinning with their *Rocks*) and though in some part the poor think it nothing to earn 4 or 6 d. a day, and will as soon stand with their hands in their pockets, as worke cheap ; yet in the *North* they account it well to earne 3d. or 4d. by spinning, which they may do.

Lastly, it would be very beneficall to this *Nation*, and save many thousand pounds, I may say 100 thousands, which are exported, either in cash or good Commodities ; and we should not be beholding to *Holland* for fine linnen and *Cordage*, nor to *France* for *Toldavices*, *Locrums*, *Canvases*, *nets*, nor to *Flaunderers* for *thread* ; but might be supplied abundantly with these necessary commodities even at our own doors.

There is nofull Deficiency in dunging and manuring lands, both because that all manner of manuring and amending lands,

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is not known to every one, and also that they do not employ *Deficit* all they know to the best use. I will therefore set down most my, con- of the wayes I have seen here in *England* and beyond *Seas*, by concerning which land is improved, and the best wayes to use the *Duning & Manuring Lands*.

1 To begin with *Chalke*, which is as old a way as *Julius Cesar's* time, as he himself reporteth in his *Commentaries*. *Chalke* is of 2 sorts.

1 A hard, strong dry *Chalke*, with which in *Kent* they make walls, burn lime, &c.

2 Kind is a small unctuous *Chalke* : this is the *Chalke* for land, the other helpeth little ; onely it maketh the Plough go easier in stiffe lands : broomy land is accounted the best land for *Chalke* and *Lime*, but it helpeth other lands also ; especially, if you *Chalke* your ground, and let it lye a year or two, which is the way used in *Kent* ; that it may be matured and shattered by the funne and raine, otherwise if it be turned in presently, it is apt to lye in great clods, as I have seene it twenty years after. *Chalke* also sweeteneth pasture, but doth not much increase it, and killeth rushes and broom.

2 *Lime*, which is made of divers sorts of stones, is an excellent thing for most *Lands*, and produceth a most pure grain: 16c bushels is usually laid on an Acre, but I suppose that if men did lay but half the dung on the ground, as they usually do, as also *Lime* and *Chalk*, and *dung* and *Lime* it oftener, it would be better *Husbandry* : for much *dung* caufeth much *weeds*, and caufeth *Corn* to lodge ; and too much *Chalke* doth too much force the land, so that after some good crops, it lyeth barren many years. It's good *Husbandry* likewise to lay down lands before they be too much out of heart ; for they will soon recover ; otherwise not.

3 *Ordinary Dung*, which every one knoweth ; but let it not be exposed to the Sun too much, nor let it lye in an high place; for the rain wil waste away it's fatnesse. It's observable, that earth the more it is expoſed to the Sun, it's the better ; as we see that land is much bettered by oft ploughings : for the Sun and

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and dew engender a *nitrous* fatnesse, which is the cause of fertility ; but dung is exhausted by the Sun, as it appeareth by the folding of Sheep, which profit little, if it be not presently turned in ; therefore a Shepherd, if his time would permit, should turne up the ground with an howe to sowe *Tar-seps*, as *Gardiners* do. I have seen *Ordinary Dung* on dry lands in dry years to do hurt, and it oft causeth vveeds and trumpery to grow.

4 *Marle*. It's of divers kinds : some stony, some soft, some vwhite, some yellowish, but most commonly blew. It's in most places in *England*, but not known by all : the best markes to know it, is to expose it to the Aire, and to see if the Sun or Rain cause it to shatter, and if it be *unctuous*, or rather to take a load or two, and lay it on the\* midst of your fields, and to try how it mendeth your lands. It's excellent for *Corne*, and *Pasture* ; especially on dry lands. In *Essex* the scourings of their ditches they call *Marle*, because it looketh blew like it, it helpeth their lands vvel.

5 *Sagreet* : vvhich is a kind of earth taken out of the Rivers, full of small shels. It helpeth the barren lands in divers parts of *Surrey*. I beleieve it's found in all Rivers ; It were vwell, if in other parts of *England*, they did take notice of it.

6 *Oysc* out of marsh ditches, hath been found very good for vvhite *Chalky* land : as also *Sea-mud* and *Sea-Oysc* is used in divers parts of *Kent* and *Sussex*.

#### 7 *Sea-Weeds*.

8 Mr. Carew in his *Survey of Cornwall* relateth, that they use a fat *Sea-sand*, vvhich they carry up many miles in sacks, and by this they have very much improved their barren lands. It were vworth the vwhile to try all manner of *Sea-sands* : for I suppose, that in other places they have a like fertilizing fatnessse.

9 *Folding of Sheep*, especially after the *Flanders* manner, (*viz.*) under a covert, in vvhich earth is strevv'd about 6 inches thick, on vvhich they set divers nights : then more earth must be brought and strevv'd 6 inches thick, and the *Sheep* felded

folded on it, and thus they do continually *Winter* and *Summer*. I suppose a shepheard, vvith one horse, vvill do it at his spare hours, and indeed sooner then remove his fold ; and this folding is to be continued, especially in *Winter*, and doth the *Sheep* good ; because they lye vvarme and dry : and truly if I am not mistaken, by this means vve may make our *Sheep* to enrich all the barren dry lands of *England*.

10 *Ashes* of any kind, *Seacoale-ashes* vvith *horsedung* the *Gardiners* of *London* much command for divers uses. It's great pity, that so many thousand loads are throvvn into vvaft plances, and do no good.

11 *Soot* is also very good, being sprinkled on ground, but it's too dear, if it be of *mood* ; for it's vvorthe 16 d. or 2 s. a bushel.

12 *Pigeons* or *Hens-dung* is incomparable: one load is vworth 10 loads of other *dung*, and therefore it's usually sovynne on *Wheate*, that lyeth afarre off, and not easie to be helped : it's extraordinary likevise on a *Hop-garden*.

13 *Male-dust* is exceedingly good in *Corn-land* : blood for trees ; also *shavings* of *hornes*.

14 Some command very much the *sweeping* of a *ship* of *salt*, or *drosey salt* and *brine* : it's very probable ; because it killeth the vvermes, and all fertility proceedeth from salt.

15 I have seen in *France*, poore men cut up *Heath*, and the *Turffe* of the ground, and lay them on an heape, to make mould for their barren lands. *Brakes* laid in a moist place, and rotted, are used much for *Hop-gounds*, and generally all things that vvill rot, if they vvere stones, vwould make dung.

16 In *New-England* they *fish* their ground, vvhich is done thus : In the *spring* about *April*, there cometh up a *fish* to the fresh *Rivers*, called an *Alevife* ; because of it's great belly : and is a kind of *shad*, full of bones ; these are caught in vvers, and sold very cheap to the planters, vvhose usfully put one or two cut in pieces into the hill vvhene their *Corne* is

is planted, called *Virginia-Wheate*, for they plant it in hills, 5 graines in an hill, almost as we plant *Hops* (in May, or June; for it wil not endure frosts) and at that distance; it causeth fertility extraordinary for two years, especially the first: for they have had 50 or 60 bushels on an Acre, and yet plough not their land, and in the same hills do plant the same Corne for many years together, and have good crops: besides abundance of *Pompeions*, and *French* or *Kidney beans*. In the North parts of *New England*, where the fisher-men live, they usually fit their ground with *Cods-heads*; which if they were in *England* would be better employed. I suppose that when sprats be cheap, men might mend their Hop-grounds with them, and it would quit cost: but the dogs will be apt to scrape them up, as they do in *New-England*, unlesse one of their legs be tyed up.

17 *Urine*. In *Holland* they as carefully preserve the Cows urine, as the dung to enrich their land: old urine is excellent for the Roots of trees. *Columella* in his book of *Husbandry*, saith, that he is an ill husband that doth not make 10 loads of dung for every great beast in his yard, and as much for every one in the houfe, and one load for small beasts as *hogs*. This is strange husbandry to us: and I believe there are many ill husbands by this account. I know a woman who liveth 5 miles South of *Canterbury*, who saveth in a pail, all the droppings of the houfes, I meane the urine, and when the pail is full, sprinkleth it on her Meadow, which causeth the grass to look yellow, but after a little time it growes wonderfullly, that many of her neighbours wondred at it, and were like to accuse her of witch-craft.

18 *Wollen rags*, vwhich *Hartford-shire*-men use much, and *Oxford-shire*, and many other places: they do very well in thinne *Chalky* land in *Kent* for two or three years. It's a fault in many places, that they neglect these, as also *Linnen rags*, or *Ropes-ends*, of the vwhich vve use and browvn paper is made; for it's strange that vve have not *Linnen-rags* enough for paper, as other Nations have; but must have it from *Italy*, *France*, and *Holland*.

19 *Dens-*

19 *Denshiring* (so called in *Kent*, where I onely have seen Mr. Cambit used, though by the vword it shoud come from *Denbigh*-*den*, *shire*,) is the cutting up of all the *turf* of a Meadow, vwith an instrument sharpe on both sides, vwhich a man vvithe violence thrusts before him, and then lay the *turf* on heapes, and vwhen it is dry they burn it, and spread it on the ground. The charge is usually four Nobles, vwhich the goodness of a crop or two repayeth.

20 *Mixture* of lands. *Columella* an old vriter saith, that his Grandfather used to carry sand on clay, and on the contrary to bring clay on sandy grounds, and vvithe good success, the Lord Bacon thinking much good may be done there- *Naturall History*.

21 I may adde *Enclosure* as an *Improvement* of land: not onely because that men, vwhen their grounds are enclosed, may employ them as they please; but because it giveth vvarmth and consequently fertilitie. There is one in *London*, vwho promised to mend lands much by vvarmth onely, and vve see that if some fevve stickes lye together, and give a place vvarmth, how speedily that grasse vvil grovv.

22 *Steeping of Graines*. The *Auncients* used to steep Beanes in salt-water: and in *Kent* it's usual to steep *Bartys*, when they sow late, that it may grovv the faster; and also to take away the foile: for vwid *Oates*, *Cockles*, and all fave *Drake* vvil fvvimme; as also much of the light Corne, vwhich to take awav is very good. If you put *Pigeons-dung* into the vwater, and let it steepall night, it may be as it vvere halfe a dunging: take heed of steeping Pease too long; for I have seen them sprout in three or four hours.

23 Is the *sowing* of *Course* and cheap Graine, and vwhen they are grovne to plough them in. For this purpose the *Auncients* did use *L U P I N E S*, a plant vvel knovvne to our *Gardiners*: and in *Kent* sometimes *Tares* are sovven, vwhich vwhen the Cattel have eaten a little of the tops, they turn them in, vvithe very good *Improvement* for their ground.

<sup>10 Defici-</sup> I wil not deny, but that we have good *Husbands*, who dung  
euy, con-  
cerning the  
not Im-  
provement  
of our  
Meadows.  
I wil not deny, but that we have good *Husbands*, who dung  
and *Marel* their *Meadowes*, and *Pasture-land*, and throw  
down all *Mole* and *Ant-hills*, and with the their *spud-staffe*,  
cut up all thistles and weeds, and that they likewise straw  
ashes on their grounds to kil the *Messe*; and salt for the  
wormes, and they do very well, but yet there are many who  
are negligent in these particulars, for the which they are  
blame-worthy, but the *Deficiencies*, of which I intend to speake  
of, are these following. *Cato*, one of the wisest of the *Ro-*  
*mans*, saith, that *Pratum est, quasi paratum*; alwayes ready,  
and prepared; and preferreth *Meadowes* before the *Olive-*  
*Gardens*, (although the *Spaniards* bequeath *Olive-trees* to their  
children, as we do *cottages*) or *Vines* or *Corn*; because *Meadowes*  
bring in a certain profit, without labour and paines: but the  
other requireth much cost and paines, and are subject to  
*Frosts*, *Mildew*, *Haile*, *Locusts*: to the which for the hon-  
our of *Meadowes*, I may adde that the stock of *Meadowes*, is  
of greater value, and the Commodities which arise from  
them, are divers, and of greater value, than *Corne*, as *Butter*,  
*Cheese*, *Tallow*, *Hides*, *Beef*, *Wool*; and therefore I may con-  
clude, that *England* abounding in *Pastures* more than other  
*Countrys* is therefore richer; and I know (what others think  
I care not) that in *France* Acre for Acre is not comparable to  
it, *Fortescue Chancelor of England*, saith, that we get more in  
*England* by standing still than the *French* by working: but to  
speak of the *Deficiencies* amongst us.

1 We are to blame, that we have neglected the great *Clo-*  
*ver-grasse*, *Saint Foine*, *Lucerne*.

2 That we do not float our lands, as they do in *Lumbardy*,  
where they mowe their lands three or four times yearly,  
which consist of the great *Clover-grasse*. Here are the excellent  
*Parmisane Cheeses* made, and indeed these *Pastures* farre  
exceed any other places in *Italie*, yea in *Europe*. We here in  
*England* have great opportunities by brooks and Rivers in all  
places to do so, but we are negligent; yet we might hereby  
double if not treble our profits, kill all rushes, &c. But he  
that desireth to know the manner how to do this, and that  
profit,

profit, that wil arise thereby, let him read Mr. *Blithes* Book of  
*Husbandry*, lately printed.

3 That when we lay down land for *Meadow* or *Pasture*,  
we doe not sowe them with the seeds of fine sweet grasse,  
*Trefoules*, and other excellent *herbes*. Concerning this you  
may read a large *Treatise* of the *Coutry-Farmer*; for  
if the land be rich, it will put forth *weeds* and *trumpery*, and  
perhaps a kind of soure grasse little worth, if it be poor, ye  
shal have thistles, *May-weed* and little or no grasse, for a year  
or two. I know a Gentleman, who at my entreaty, sowed  
with his *Oates* the bottome of his *Hay-mow*, and though his  
land were worne out of heart, and naturally poor; yet he  
had that year not onely a crop of *Oates*; but he might if it  
had pleased him, have mowen his grasse also, but he spared  
it, which was wel done, til the next year, that it might make  
a *turfie*, and grow stronger. By this *Husbandry* lands might  
be wel improved, especially if men did consider the diversi-  
ty of graftes, which are 90 sorts, and 23 of *Trefoule*: I know  
a place in *Kent*, which is a white *Chalky downe* which ground  
is sometimes sownen with *Corn* a year or two, and then it rest-  
eth as long or longer: when it is laid down, it maintaineth  
many great *Sheep* and very lusty, so that they are even fit for  
the *boucher*; and yet there doth scarce appear any thing that  
they can eate, which hath caused divers to wonder, as if they  
had lived on *Chalke-jones*: but I more seriously considering  
the matter, throughly viewed the ground, and perceived that  
the ground naturally produceth a small *Trefoule* which it fe-  
meth is very sweet and pleasant, it's commonly called *Trifo-*  
*lium luteum*, or *Lupinum*, that is, *yellow* or *Hop-Trefoule*: and  
I am perswaded, if that the seed of this *Trefoule* were prefer-  
red, and sownen with *dates*, when they intend to lay it down,  
it would very much advance the *Pasture* of that place; there-  
fore I desire all *Ingenious* men, seriously to consider the na-  
ture of the *Trefoules*, which are the sweetest of grasses, and to  
observe on what grounds they naturally grow: and also the  
nature of other grasses, which (as I have said before) are no  
lesse than 90 sorts, naturally growing in this *Re*; some on  
we-

watry places, some on dry, some on clay, others on sand, chalk, &c. some on fruitful places, others in barren; by the which meanes, I suppose a solid foundation might be laid, for the advancing the *Pasture-lands* of all sorts, through this *Island*? for I know some plants, as the *Orobi* call'd *Bee-flower*, &c. which wil thrive better on the *Chalky* barren banks, than in any garden, though the mould be never so rich and delicate, and the Gardiner very diligent in cherishing of it: and why may not the same propriety be in grasses? for we see diverse *benty* grasses to thrive, especially on barren places, where scarce any thing else wil grow. I must againe and againe desire all men to take notice of the wonderful grasse which groweth near *Salisbury*, and desire them to try it on their Rich *Meadowes*,

<sup>1</sup> *Deficiencies* in *concerning waste Lands*. It's a common saying, that there are more *waste lands* in *England*, in these particulars, than in all *Europe* besides, considering the quantity of land. I dare not say this is true; but hope if it be so, that it will be mended. For of late much hath been done for the advancement of these kinds of land; yet there are as yet great *Deficiencies*. In the times of *Papistry*, all in this *Island* were either *Souldiers* or *Scholars*; *Scholars* by reason of the great honours, privileges, and profits, (the third part of the *Kingdome* belonging to them) and *Souldiers*, because of the many and great warres with *France*, *Scotland*, *Ireland*, *Wales*. And in those times *Gentlemen* thought it an honour to be carelesse, and to have *horses*, *furniture*, *diet*, *exercises*, *apparell*, &c. yea all things at home and abroad, *Souldier-like*: *Musick*, *Pictures*, *Perfumes*, *Sauces*, (unlesse good stomacks) were counted, perhaps unjustly, too effeminate. In *Queen Elizabeth's* dayes *Ingenuities*, *Curiosities* and *Good Husbandry* began to take place, and then *Salt Marshes* began to be fenced from the Seas; and yet many were neglected, even to our dayes, as *Hollhaven* in *Essex*, *Axtel-holme Isle* in *Tork-shire*: many 1000 of Acres have lately been gained from the Sea in *Lincolne-shire*, and as yet more are to be taken in there, and in other places. *Rumsey-marsh*

*marsh* in *Kent* consisting of 4500 Acres and upwards, (as *Camden* relateth) is of some antiquity where the land is usually let for 30 s. per Acre, and yet 1 d. per week constantly is pay'd, through the whole levil, for the maintenance of the wall, and now and then 2 d. whereas ordinary fatts are accounted dear at 5 s. or 6 s. per Acre; so that the improvement is very considerable: the same I may say of *Fens*, especially that great *Fen* of *Lincoln-shire*, *Cambridge*, *Huntingdon* consisting as I am informed of 38000 Acres, which is now almost recovered; and a friend of mine told me very lately, that he had profered a marke per Acre; for 900 Acres together, to sowe *Rape* on, which formerly was scarcely valued at 12 d. per Acre; very great therefore is the improvement af draining of lands, and our negligence very great, that they have been wast so long, and as yet so continue in divers places: for the improving of a Kingdome is better than the conquering of a new one.

<sup>2</sup> I see likewise no small faults in this land, by having so many *Chases* and *Forrests*, where brambles, brakes, furzes do grow, when as these trumperies might be cut up, and potashes made of them; and the ground employed profitably for *Corne*, or *Pasture*. I know a *Forrest* by *Brill* in *Buckingham-shire* taken in, and the land is usually let being now wel enclosed, for 4 or 5 Nobles per Acre.

<sup>3</sup> Sort of *waste-land*, is dry heathy Commons. I know that poor people wil cry out against me, because I call these *waste lands*; but it's no matter: I desire Ingenious *Gentlemen* seriously to consider, whether or no these lands might not be improved very much by the *Husbandry* of *Flaunders*, (*viz.*) by sowing *Flax*, *Turneps*, great *Clover-Grasse*, if that *Manure* be made by folding *Sheep* after the *Flaunders* way, to keep it in heart?

<sup>2</sup> Whether the *Rottenness* and *Scabbiness* of *Sheepe*, *Merrie* of *Cattel*, *Diseases* of *Horses*, and in general all diseases of *Cattel* do not especially proceed from *Commons*?

3 If the rich men, who are able to keep great stock, are not great gainers by them?

4 Whether *Commons* do not rather make poore, by causing idlenesse, than maintain them; and such poor, who are trained up rather for the Gallowes or beggery, than for the Common-wealths service?

5 How it cometh to passe, that there are fewest poor, where there are fewest *Commons*, as in *Keat*, where there is scarce six *Commons* in the County of a considerable greatness?

6 How many do they see enriched by the *Commons*; and if their Cattel be not usually swept away by the *Rot*, or starved in some hard winters?

7 If that poor men might not employ 2 Acres enclosed to more advantage; than twice as much in a *Common*?

And Lastly, if that all *Commons* were enclosed, and part given to the Inhabitants, and part rented out, for a stock to set all the poor on work in every County; I determine nothing in this kind: but leave the determination for wiser heads.

4 *Parkes*. Although I cannot but reckon *Parks* amongst lands, which are not improved to the full; but perceive considerable waste by them, by *brakes*, *bushes*, *brambles*, &c. growing in divers places, and therefore wish there were fewer in this *Island*; yet I am not so great an enemy to them, as most are: for there are very great Uses of them, as.

1 For the bringing up of young cattle.

2 For the maintaining of Timber, so that if any have occasion to use a good piece of Timber either for a Mil-post, or a Keel of a Ship, or other special uses, whither can they go but to a *Park*?

3 The skins of the *Deer* are very useful, and their flesh excellent Food. Not to speak of the Medicinall Uses, nor of *Acorns* for hogs, &c. But some wil object, that the plough never goeth there. To the which I answere, It's no matter: for I cannot but say as *Fortescue* Chancellor to *Henry 6* doth,

That

That God hath given us, such a fruitful land, that without *Preemi-*  
labour we have plenty: whereas *France* must digge and delve *newe* *ef-*  
or vhat they have. And I suppose, that I could maintaine *English*  
two things vwhich are thought great *Paradoxes*, (viz.) *L. M.*  
that it were no losse to this *Island*, if that we should not  
plough at all, if so be that we could certainly have Corne at  
a reasonable rate, and likewise vent for all our *Manufactures*  
of *Wool*.

1 Because that the Commodities from Cattel are farre  
more stable than Corne: for *Cloth*, *Stuffes*, *Stockins*, *Butter*,  
*Cheese*, *Hides*, *Shoes*, *Tallow*, are certain even every where:  
Corne scarcely in any place, constantly in none.

2 *Pasture* employeth more hands, which is the second *Pa-*  
*radox*; and therefore *Pasture* doth not *depopulate*, as it is com-  
monly said: for *Normandy* and *Picardy* in *France*, where  
there are *Pastures* in a good measure, are a populous as any  
part of *France*; and I am certain, that *Holland*, *Frieseland*,  
*Zealand*, *Flaunder*, and *Lombardy*, which rely altogether on  
*Pastures* are the most populous places in *Europe*. But some  
wil object and say, that a shepheard and a dog formerly hath  
destroyed divers villages. To this I answer, that we wel knowv  
vhat a shepheard and a dog can do, (viz.) look to two or  
three hundred sheep at the most, and that two or three hundred  
Acres wil maintain them, or the land is extreamly bar-  
ren; and that these two or three hundred Acres being bar-  
ren, wil scarcely maintaine a Plough, (vwhich is but one man  
and two boys,) vwith the horses and that the *mowing*, *reaping*,  
and *threshing* of this Corne, and other worke about, wil  
scarcely maintaine three more vwith work through the vhole  
year. But how many people may be employed, by the  
*Wool* of two or three hundred *Sheepe*, in *Picking*, *Sorting*,  
*Carding*, *Spinning*, *Weaving*, *Dying*, *Fulling*, *Knitting*, I  
leave to others to calculate. And further if the *Pastures* be  
rich *Meadowes*, and go on *dairing*, I suppose all know, that  
100 Acres of such land employeth more hands than 100 A-  
cres of the best Corne-Land in *England*, and produceth like-  
wife

wife better exportable Commodities. And further, if I should grant, that formerly the Shepherd and his dog did depopulate; yet I wil deny, that it doth so now: for formerly we were so unwise, as to send over our *Wool* to *Antwerpe*, and other places, where they were *Manufactured*; by which meanes one pound oft brought 10 *unwrought* to them; but we set now our own poor to work; and so lave the *depopulation*. Yet I say, it's convenient to encourage the plough; because that we cannot have a certainty of Corne and carriage is dear, both by sea and land, especially into the *Inland-Countrys*; and our Commodities by *Wool* do cloy the Merchants.

5 *Ruby-lands*. Blith telleth us, good Remedies for these *Inconveniences*, (viz.) making deep trenches, oft mowings, Chalking, Liming, Danging and Ploughing. I know where hungry guests Horses soone make an end of them.

6 *Furze, broom, heath*, these can hardly be so destroyed, but at length they wil up againe; for God hath given a peculiar propriety to every kinde of earth, to produce some peculiar kinds of Plants, which it wil observe even to the worlds end, unlesse by *Dung, Marle, Chalkg*, you alter even the very nature of the earth. In *Gallitia* in *Spaine*, where such barren lands do very much abound, they do thus: first, they grub them up as clean as they can; of the greater Roots and branches they make fire-wood; the smaller sticks are either employed in fencing, or else are burnt on the ground; afterwards the land being ploughed twice at least, they sowe *wheate*, and usually the crop is great, which the *Landlord* and *Tenant* divide according to a compact; then the ground resteth, and in 3 or 4 yeares the *Furze* or *broom* wil recover their former growth, which the painful *Husband-man* grubbeth, and doeth with it as formerly. I set this down that you may see how laborious the *Spaniard* is in some places, the poverty of the countrey compelling him to it.

7 There are other *Inconveniences* in land, besides weeds and

and trumpery (viz.) *Ill tenures*, as *coppys-hold*, *Knight-service*, &c. so that the *Possessor* cannot cut any Timber downe, without consent of the *Lord*; and when he dyes must pay one or two yeares rent. But these are not in the power of the poor *Husbandman* to remedy; I therefore passe them by: yet hope that in little time we shal see these *Inconveniences* remedied; because they much discourage *Improvements* and are (as I suppose) budges of our *Norman* slavery.

To conclude, it seemeth to me very reasonable, and it wil be a great encouragement to laborious men, to *improve* their barren lands, if that they shoulde have recompence for what they have done, according as indifferent men shoulde judge, when they leave it, as is the custome in *Flanders*.

I have likewise observed some *Deficiencies* in *Woods*, which I shall briefly declare, with the best way to *Remedy* the *envy* in *the Woods*.

1 It's a great fault that generally through the *Island* the *Woods* are destroyed; so that we are in many places very much necessitated both for fuel, & also for timber for building and other uses; so that if we had not *Coales* from *New-castle*, and *Boards* from *Norway*, *Plough-slaves* and *Pipe-slaves* from *Prussia*, we should be brought to great extremity: and many *Mechanickes* would be necessitated to leave their callings.

2 *Deficiency* is that our *Woods* are not ordered as they should be; but though *Woods* are especially preserved for timber, for building and Shipping; yet at this time it's very rare to see a good *Timber-tree* in a *Wood*.

3 That many of our *Woods*, are very thinne, and not replenished with such sorts of *Wood*, as are convenient for the place.

4 That we sell continually, and never plant or take care for posterity.

These *Deficiencies* may be thus *Remedied*.

1 To put in execution the *Statutes* against *grubbing* of *Woods*, which are sufficiently severe. Its well known, we have good lawes

lawes ; but it's better knowne, they are not executed. In the *Wilde of Kent*, and *Sussex*, which lies far from the *Rivers* and *Sea*, and formerly have been nothing but *Woods*, liberty is granted for men to grub what they please ; for they cannot want firing for themselves, and they are so scared, that neither firewood, nor timber can be transported elsewhere. I know a *Gentleman* who proffered their good *Oak-timber* at 6 s. 8 d. per tun, and the land in thole parts in general is very good. About *Tunbridge* there is land which formerly was *Wood*, is now let for 30 s. per Are ; so that to keep such lands for *Wood*, would be both losse to the owner, and to the *Island*: But in other parts of the *Island* it is otherwvise, and men are much to be blamed for destroying both timber and fuel. I have seen at *Shooters-hill* near *London*, some *Woods* stubbed up vvhich vvere good ground for *Wood*, but novy are nothing but *furze*, vwhich is a great losse, both to the owner and to the *Country*. For the land is made vvorse then it vvas formerly. I conceive there are *Lands*, vvhich are as naturally ordained for *Woods*, viz. *Mountainous*, *Craggy*, *unven land*, as *small bits* for the *Vines* and *Olives*; *plain lands* for *Corne*; and *low moist lands* for *Pasture*: vvhich lands if they be stubbed, do much prejudice the *Common-wealth*.

2 That all *Woods* should have such a Number of *Timber-trees* per *Acre*, according to the *Statute*. There is a good law for that purpose, but men delude both themselves and the lavy, that they every *fellng* cut downn the *Standers* vvhich they left the *falling* before, least perchance they should grovvy to be *Timber*, and leave i 2 small *standers*, that they might seem to fulfil in some measure the *Statute*; but it's a meer faliacie, and caufeth the *Statute* to fail of it's principal end, vvhich is to preserve *Timber*.

3 The best *Remedy* against thinnesse of *woods*, is to plash them and spread them abroad, and cover them partly in the ground, as every *Countryman* can direct; by this meanes the *wood* vvil loone grovvy rough and thick. It's good *Husbandry* likevvise to fil your *woods* vvith *swift growers*, as

*Ashes*,

*Ashes*, *Sallow*, *Willow*, *Afpe*, which are also good for *Hemp-poles*, *Hooper*. *Sycamore* is also a *swift grower*. In *Flanders*, they have a kinde of *Salix*, called by them *Abell-tree*, which speedliy growtheth to be timber.

4 That some law be made, that they which fel, should also plant or sow. In *Byfay* there is a law, if thatany cut down a *Timber-tree*, he must plant three for it, which law is put into execution with severity : otherwife they would soon be undone ; for the *Connery* is very mountainous and barren, and dependeth wholly on *Iron Mines*, and on *Shipping* : their *Woods* are not *copied* there, but onely *Pollards*, which they lop when occasion serveth. I know one, who was bound by his *Land-Lord*, to plant so many trees yearly, which according he did, but alwayes in such places that they might not grow. In *France*, near to the borders of *Spane*, they lowe *Ashkey*, which when they grow to such a greatnessse, that they may be slit into four quarters, and bigenough to make *Pikes*, then they cut them down ; and I have seen divers Acres together thus planted: hence come the excellent *Pikes*, called *Spanish-Pikes*. Some *Gentlemen* have sown *Acornes*, and it's a good way to encrease *Woods*. Though the time is long, I doubt not but every one knoweth, that it's excellent to plant *Willowes* along the waters side, and *Ashes* nigh their houses for firing : for they are good pieces of *Husbandry* ; and it's pitty that it's not more put in practise. There is a *Gentleman* in *Essex* who hath planted so many *Willowes*, that he may lop 2000 every year : if others were as *Ingenious*, we should not want fire-wood ; *Oifers* planted in low morish grounds do advance land from 5 s. per *Acre* to 40 s. 50 s. 3 l. and upward ; it's much used Westward of *London* : these *Oifers* are of great use to *Basket-makers*. There is a sort of small *Oifer* or *Willow* at *Saint Omars* in *Flanders*, which groweth on *Islands* which floate up and downe ; it's farre lesse than that which the *Westerne* men call, *Eights*, with this they make their curious fine *Baskets* : this plant is worth the procuring, being so nigh : *John Tredefcat* hath some plants of it. There

is.

is a plant likewise in *England* called the *Sweet Willowes*; it's not only good for shade and firing, but as I am inform'd, the leaves do not soure the grasse, but that the cattel wil eat them sooner than *Hay*: if this be so, it may be of singular use for *Meadowes*.

5 That those things which mightily destroy *Woods*, may be restrained, as *Iron-workes* are; therefore the *State* hath very wel done to pul downe divers *Iron-workes* in the *Forrest of Deane*, that the timber might be preserved for *Shipping*, which is accounted the toughest in *England*: and when it is dry as hard as *Iron*, the *Common-people* did use to say, that in *Queen Elizabeths dayes* the *Spaniard* sent an *Ambassador* purposely to get this *Wood* destroyed: how true this is I know not; but without question it's admirable *Wood* for *Shipping*, and generally our *English Oake* is the best in the world for *Shipping*; because it's of a great graine, and therefore strong: but the *Oakes* of other *Countrys* have a finer graine, and more fit for *Wainscot*; and in this kinde our *Forefathers* have been very provident; for we have an *Act* of long standing, prohibiting *Iron-worke* within 20 miles of *London*, and within 3 miles of the *River of Thames*: though you may finde *Iron-stone* in divers places, as in the great gravel-pit at *Woolwich*. There are some *Ingenious men*, who lately have got a *Patent* for making *Iron* with *Sea-coale*: I hope they wil accomplish their delires; for it would wonderfully advance this *Island*, and save *Wood*. There are two faults in *Sea-coale*, in respect of melting *Iron-oare*.

1 That it is apt to bake together, or cake.

2 It hath a *sulphureous fume* in it, which is an enemy to *Metal*, and consumeth it as we see by our *Iron-Bars* in *Windows* at *London*; so that the *Metallin* nature of the *Iron-stone* is much wasted by it, and that which remaineth is very brittle, and wil be *Could-fibre*. I know that by the mixture of *Coale* beaten with *soame* and throughly dried, one (if not both of these *Inconveniences*) may be taken away. In the *Duke of Cleveland's Country*, they use have *Turff*, half *Char-*

*Charcole*. There is a way by making a kinde of *Barter* with *Loame*, *Urine*, &c. vwhich wil cause *Charcole* to last very long, as I am informed: but these discourses belong to another place.

It's a great *Deficiency* here in *England* without question, <sup>13 Defici-</sup> that vve have no more *Bees*, considering that they are neither <sup>any</sup> of chargeable, requiring onely a fewv stravves for an house, nor troublesome: and this *Island* may maintaine ten times as many: for though a place may be over-stocked vvith these *Animal*, as vvith the greater; yet I knowv no part of this land, that is so: and I know divers places which vvould maintain many hundred *hives*; yet scarce one to be seen.

2 Our *Honey* is the best in the vvorld, and *Wax* a staple Commodity. Further we know, that that cold *Conntryes*, not comparable to ours as *Moscovia* have farre greater quantity than vve have; so that it's incredible vwhat quantity is found in the *Woods*, if the story of the man be true, vwho fel up even to the eares in *Honey*, and had there perished, had not a *Bear*, on vwhich he caught hold, pulled him out. Now I have enquired, hovv it commeth to passe that there is so great store of *Honey* in *Moscovia*, considering the Winters are extreme cold, and also very long: and I am credibly informed that first, the spring vwhen it beginneth, cometh extraordinary fast, that the dayes are very long, and the Summers farre drier than ours here in *England*, so that the *Bees* are not hindered by continual *showers*; as they are some yeares here in this *Isle*: and lastly, that the *Country* aboundeth much vvith *Pirs*, and *Pine-trees*, vwhich the *Inhabitants* usually cut, that the *Gumme*, *Resinous*, or *Turpentine* substance may sweat forth, to which places the *Bees* do come, and presently fil themselves, and returne laden: and perhaps for these very reasons, *Bees* thrive very much in *New-England*.

2 We are *Deficient* in the ordering of them. Not to speak of the negligence of particular men, which is very frequent: nor to write a general story of the ordering of them, because it requireth much paper: and Mr. *Leveret* and *Bur-*

ler; especially the latter, hath written so exactly, and upon his own experience that little can be added to it: only in a point or two I differ from him; of the which I wil speake briefly.

1 That we must take and destroy all the Bees for their Honey, and not drive them, as they do in Italy once or twice yearly.

2 That if a swarne be poor with little Honey, that that swarne ought to be taken; because it is poore; so that the rich stockes are destroyed, because they be rich, and the poor swarmes, because they be poor: so that be they rich or be they poore, they must be destroyed. An Italian reporteth, that in the City of Askaly, there was a law made, that none should destroy a swarne of Bees, unlesse he had a just cause; accounting it a part of extream injustice and cruelty, to take away without cause, both the goods and lives of such good and faithful servants. I am credibly informed, that an English Gentleman beyond the Seas, getteth many 100l. yearly, by keeping Bees after a new and Ingenious Manner, which is thus. He hath a roome made very vvarm and close; yet vwith glasse-vvindowes, vvhich he can open at his pleasure, to let the Bees fly abroad vvhen he pleafeth, vvhether he keepeth his Bees and feedeth them all vvinter; vvhith a sweet Composition made of Molasses, Flowers, sweet Wine, Milke, Raisins, &c. (for vvhich such things as thele, they usually feed the Bees in Italy) and oftentimes in summer, vvhen the vveather is rainy, vwindy, or so disposed, that the Bees cannot conveniently go abroad, he feedeth them at home, vvhith divers sweet things, and gathereth divers flowvers, and layeth them amongst them, and sticketh up many fresh boughes in divers places of his Roomes, that in swarming-time, they may settle on them; by these meanes he preserveth all his swarmes, and gathereth an incredible quantity of Honey and wax; and truly this vway seemeth to me very probable: for

3 We knowv the Bees, (even as vve say of the Auns) vvil worke continually, even night and day, vvinter and summer;

if that they were not hindered by dackenesse, cold, and moisture.

2 That Bees do not onely make Honey, (for I suppose, that they have a peculiar propriety of making Honey, as the silk-wormes Silk,) out of Mildewes or Honey, but also out of all sweet things, as Sugar, Molasses, &c.

3 That many sweet things may be had, far cheaper than Honey; which (I suppose) the Bee wil transmuite into perfect Honey. This way, I conceive, would be very advantagous to us in England, for the preserving of late swarmes, and also for the enriching of old stocks, so that we need not destroy them, but might drive them from hive to hive, and set them to work again; and truly I think there is no place in the world so convenient for this purpose as Engiland; because that though our Winters be long, yet they are not very cold; but Bees would be stirring in them: and further our Summers are so subject to windes and raines, that many times there is scarce a fine day in a whole week: and Further Molasses, Refuse Sugar, Sweet Woort, Milke, &c. may be had at reasonable rates.

I hope ere long to give an exact account of this experimēt, and desire those who have any Ingenuities in this kind, freely to communicate them. I have not obserued many things more of importance concerning Bees, in my travells; only in Italy they make their hives of thin boards, square in 2 or 3 partitions, standing either above one another, or very close side to side, by the which meanes, they can the better borrow part of their honey when they please. In Germany their hives are made of straw, to the which they have a summer-doore, as they call it, which is nigh the top of the Hive, that the Bees when they are laden, may the more easily enter and discharge themselves of their burthens.

3 We are to blame, that we do not employ our Honeys in making Metheglin: It's true, that in Hereford-shire and Wales, there is some quantity of this liquor made; but for want of good cookery it's of little worth; but usually of a browne

colour, of an unpleasante taste : and as I suppose commonly made of the *refuse honey, wax, dead Bees, and such stiffe; & as they ordinarily make it elsewhere* : for the good house-wife thinkes any thing good enough for this purpose ; and that it is pity to spoyle good *Honey* by making *Meade* : but I know that if one take *pure neat honey*, and ingeniously clarifie and scum and boile it, a liuour may be made not inferiour to the best *Sack, Muskadine, &c.* in colour like to *rock-water*, without ill odour or favour ; so that some curious Pallates have called it *Vin Greco, rich and racy Canary*, nor knowing what name to give it for its excellency : This would bring very great Profit, not onely to the *Publique*, by saving many i'cool. disbursed for *Wines* through all the world ; but would be very advantageous to private families, who use to entertaine their friends very nobly ; *Wines* being at present intolerably dear and naught ; I hope therefore ere long to see it put in execution. An excellent drinke not much unlike this may be made of *Sugar, Molasses, Raisins, &c.* of the which I have already spoken, yet thinke it fit to put you in minde of it againe.

14 Deficiency concerning Silk-worms

It's a great Deficiency here in *England*, that we do not keep *Silk-wormes* (which in *Italy* are called *Cavalieri*,) for to make *Silke*. I know that is a great *Paradox* to many, but I hope by this short discouerfe to make this truth to appear plainly : The first original of *Silk-wormes* by what I reade in Histories is from *Perse*, where in infinite numbers they are still maintained ; and the greatest profits of that great Monarch do arise from hence : *China* also aboundeth very much with *Silke*. In *Virginia* alſy the *Silk-wormes* are found wilde amongst the *Mulberry-moors*, and perhaps might be managed with great profit in those plantations if *Land* were not so ſcarce and deare. I ſuppoſe this *Silk-worme of Virginia* is produced by the corruption of the *Mulberry-tree*, as *Cochin-meale*, from *ficus Indica*, or *Indian figtree*: for ſome ingenious & curious men who have ſtrictly obſerved the generation of *Inſects*, do finde that every plant hath an *Inſect* which groweth

out

out of its corruption, (as diuers ſorts of lice from *Animali*) and that these *Inſects* do uſually feed on that plant, out of which they were made, as *Lice* on the fame *animals* frō whence they were engendred. I know a Gentleman here in *London*, who hath 3 or 400 *Inſects*, and can give a very good account of *M. Marſhal*, their original feedings : And also Mr. *Morency in Paris*, hath a large book of the fame ſubject. But to retorne to our purpoſe : I ſay that we had *Silk-wormes* firſt from *Perſia*. In *Justinian's time* abouir 1000 or 1100 years ago, ſome Monkes preſented a few to him at *Constantinople* ; where in his time they began to plant *Mulberries* : from thence it came to *Italy*, about 2 or 400 years ſince : for the *Ancient Writers of Husbandry*, as *Cato, Pallad, Columell*, do not ſo much as mention theſe creatures : and at length theſe have paſſed over the Mountains into *Franſe* within an 100 years ; where they flouriſh ſo much, that if we will believe their own *Authoress*, they bring greater profit than the *Wine* and *Corne* of that large *Coutry*. I know that *Franſe* hath *Silke* enough to maſtaine their exēſſe of apparell, and to export *Pluſhes, Velvetts, &c.* Now then if that theſe wormes can thrive, not onely in the parched *Perſia*, but alſo in *Greece, Italy, yea in Franſe* ; which diſfereth not much from the temper of *England* ; why ſhould we thinke, that they are confined to that place, and muſt move no farther Northward ? for they have come many 100 miles toward the *Norib*, why not one 100 or two more ? and further we ſee that *Mulberries*, which is their food, thrive here as well as in any place. But ſome will object, that our Aire is too cold and moist. To which I anſwer.

1 That theſe who write of *Silk-wormes*, ſay, that you muſt take heed, that you make not the place too hot : for too much heate may deſtroy ; and therefore that you muſt ſet the windowes open to let in the cold Aire.

2 We know, that moistneſſe of aire rather encreaſeth ſuch *Inſects*, and nouriſheth them. Indeed if moisture hurteth, it's becauſe that it too much corrupteth their food, and cauſeth

causeth a flux amongst them : but this easily is prevented, as I shall shew you anon. But to be short, it is not onely my opinion that *Silke-wormes* will thrive here, but the solide judgment of King James and his Council confirmeth the same : as you may see by his letter to the *Deputy-Lieutenants* of every County; wherein also many weighty reasons are contain'd to convince men of the same, which letter followeth anon.

Lastly, we finde by experience, that *Silke-wormes* wil thrive here, and therefore the matter is out of question : for divers *Ladies, Gentlewomen, Scholars, Citizens, &c.* have nursed up divers wormes to perfection, though they have had little skil in the managing of them ; and likewise not such accommodations as are necessary for them ; and more would they have done, if they could have had *Mulberry-leaves*. I am informed that one near *Charing-Crofe*, maketh a good living by them : as also another by *Ratcliffe-Crofe* ; and therefore if we can bring up an 100, why not a 1000, yea, 10000, if we had food for them ? Truly, I know no reason to the contrary, neither could I ever finde one that could speak any thing to the purpose against the busynesse. And further I must tell you, that the ordering of this *worme* is very easie, none need to be bound prentize to the trade ; the speciall busynesse is to be carefull in feeding them, and keeping them sweet ; which things children use to do. He that would learne this *Art* exactly, let him read *Bonvil*, or an Authour W.S. Printed 1609, about *Mulberries*, and sold in *Paul's Church-yard*, by *Eleaz. Edgar* ; but because that the books are out of print, I will give you a few *Rules*.

First, endeavour to get store of *Mulberry-trees*, which are of 2 sorts, the *white* and the *black*. The *white* groweth greatest, and hath a fine leafe, and sweetest, and therefore fittest for the young wormes. This is easily propagated by *Slips*, as *Quinces, Codlings*. The *Black Mulberry* is difficultly propagated by *Slips*; but must be raised from *seeds*, sovyn either at *Michaelmas*, when the *Mulberries* are eaten : or kept in *dishes* dry

dry sand till the spring ; and then sowe or howe them in, as other seeds and stones, and must be diligently weeded. This growtheth not to be so great a tree as the former : the leaves are rougher and harsher, and fittest for the wormes. When they are strong and ready to spin, when your trees are grown to a good bignesse, you may plant them forth, as is usually done for *walkes* or *Orchards*, or in waste places, as they do in *Italy*, (for the *Fruit* is little worth, onely the *Leaves* are usefull,) where I have seen the trees as bare of leaves at Mid-summer as at Mid-winter. There are 2 sorts of *Silke-wormes*, the *Spanish* and *Calabrian*. The *Spanish* is the smaller, and more tender, and maketh a finer silke. The *Calabrian* is greater and more hardy, and maketh more *Silke*, but courser. This sort seemeth to be the best for this *Country*. When the *Mulberry-trees* begin to bud, take the *eggs* of your *Silke-wormes*, and lay them on a piece of *stuff* or *Tay*, (some use to *Barbe* them first in warme *Malmsey*, and say that it maketh them stronger,) and carry them about you in the day in a *Box*, in the night lay them under your *Bed*, or in a warme *Oven*, till the wormes begin to come forth, then lay a piece of paper of the widenesse of the box, cut full of holes on them, and on the paper lay *Mulberry-leaves*; and as fast as they hatch they will crawle forth, and stick to the *Mulberry-leaves* ; which remove into other boxes, till all be hatched : then when they have past their second sicknesse, feed them on *betales* 2 foot broad and 18 inches one from another : the Roome where you keepe your Wormes, must neither be a low place, nor nigh the tiles ; but a middle Roome, warme and dry, yet sometimes a little cold air is good.

Take heed of *Rats* and *Mice*, as also of *Hens, Robinred-breasts, Sparrows*, and other birds ; for they will eat them.

They have 4 *Sicknesse*, the first 12 dayes after they are hatched ; and from that time at the end of every 8 dayes : their sicknesse lasteth 2 or 3 dayes, and then they are to be fed but very little.

The whole time that the wormes do feed, is about nine weeks.

weekes: feed them twice daily at least: at the first: vwhen they are small; give them a few leaves; and as they grov greater, more, and feed them oftner. Let your leaves be dry and vwell aired upon a Table or cloth before you give them; and gather not your leaves, till the devy be off; and in dry season if you can possibly, you may keep your leaves gathered 3 or 4 dayes or longer.

Keep your shelves and boxes very clean: but take heed you touch not your vormes with your hands, vwhen you remove them; but move them not vwhen they are sick. In cold moist vweather, set a Pan of coales in the Roome, and burn a little Benjamin, Juniper, &c. especially vwhen they are young, (viz.) the first 5 weekes; but aftervwards, unlesle it be extraordinaire cold, give them Aire, and keep them not too hot, and let the Roome be wel sented vwith Herbs.

Let not your worms be too thick on the shelves: if any dye or be sick, speedily remove them, lefft they infect the rest.

As soone as by the cleare Ambour-colour of your worms, you perceive that they would spin, make Arches betwixt your shelves, with heath made clean, branches of Rosemary, Lavender, &c. where the worms will fatten themselves, and make their bottomes in 2 or 3 dayes, and about 12 or 14 days after, will come forth: before which time, you must take away the bottome, which you will use for Silk, and kill the vorme vwithin, by laying the bottomes in the sun 2 or 3 dayes, or in an hot Ouen.

The bottome vwhich you vwill keep for seed, lay in a yvarme place, till the worms come forth: which put on some pieces of old Say, Grogan, Velvet, made fast to some wall: there they will engender, and the Male having spent himself falleth down and dyeth; so the Female, when she hath laid her eggs, which eggs when they are gray, you may gently take them off vwith a knife, and keepe them in a piece of Say in a dry place, till hatching time come.

The vvinding of the Silk off the bottome requireth a peculiare vwheel, vwhich an Artificer must make: 1 l. and 2 ounces of the bottome yieldeth from 1 ounce to 3 of Silk.

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An ounce of Spanish seed yeeldeth ordinarily 6. 8. or 10. ls. of Silk, and the worms will eat 250. ls. of leaves: the Calabrian-worms being greater, do eat nigh 300. weight, and yeeld 11. or 12. pound of Silk.

To conclude, I desire all men seriously to consider, what advantage this busynesse will bring to this Island, if it be brought to perfection. Truly I know nothing doth hinder but want of Mulberry-trees, which will in little space come to a confisdrable greatness. And though I command those who endeavour to advance this work in Plantations, and prefer it before Tobacco; yet I know that it cannot be for want of hands; whereas in England we have plenty of women, children, old folks, lame, decrepit, &c. who are fit to be overseers of this work. And I wonder Gentlemen do not go about a thing so pleasant and profitable, (for 3, 4, or 5. at most will attend as many worms as will make 40. or 50. ls. worth of Silk, i.e. 2. or 3. moneths) and the worms eat onely leaves, which are of no value: neither is there any considerable trouble about the worms unlesle it be the 12. or 15. last days. I hope, if that particular men will not endeavour to advance this work for their private profit, yet the State will for the Publick Good, it being the best way I know to set all the poor Children, Widdows, old and lame people on work, and likewise will save this Nation many 100. thousand pounds per annum. And further, the way to accomplish this work may be done without grievance to the Subject, (viz.) to command every one to plant or sow so many Mulberry seed, which may easily be procured from beyoud Seas, &c. But I leave States matters to States men, I am none.

*A Copy of King James's Letter to the Lords Lieutenants  
of the several Shires of England, for the increasing of  
Mulberry-Trees, and the breeding of Silk-Worms, for  
the making of Silk in England.*

J A M E S R E X.

*Right Trusty and Wel-beloved, we greet you well.*

I T is a principal part of that Christian care, which appertaineth to Sovereignty, to endeavour by all means possible, as well to beget,

*I get,*

get, as to encrease amongt their people the knowledge and practise of all Arts and Trades, whereby they may be both weaned from idlenesse and the enormities thereof, which are infinite, and exercised in such industries and labours as are accompanied with evident hopes, not onely of preserving people from the shame and grief of penury; but also raisng and increasing them in wealth and abundance, the Scope which every free-born spirit aimethat, not in regard of himself onely, and the easie which a plentifull estate bringeth to every one in his particular, but also in regard of the honour of their Native Country, whose commendations is no way more set forth then in the peoples Activeness and Industry. The consideration whereof, having of late occupied our minde, who alwayes esteeme our peoples good, our necessary contemplations: We have conceived as well by the discourse of our own reason, as by information gathered from others, that the making of *Silk*, might as will be effected here, as it is in the *Kingdome of France*, where the same hath of late years been put in practice. For neither is the climate of this *Isle* so far distinct or different in condition from that *Country*; especially from the hither parts thereto, but that it is to be hoped, that thole things which by industry prosper there, may by like industry used here, have like success, and many private perlons who for their pleasure have bred of thole worms, have found no experiance to the contrary, but that they may be nourished and maintained here, if provision were made for planting of *Mulberry-trees*, whose leaves are the food of the worms. And therefore we have thought good thereby to let you understand, that although in suffering this invention to take place, we do shew our selves somewhat an adversary to our profit, which is the matter of our *casbonnes* for silk brought from beyond the seas, will receive some diminution: Nevertheless, when there is question of so great and publick a thing to come to our *Kingdome* and *Subjects* in general; and whereby (besides multitudes of people of both sexes and all ages) such as in regard of impotency are unfit for other labour, may be set on work comforted and relieved; we are content that our private benefit shall give way to the publick; and therefore being perswaded that no well effected subject will refuse to put his helping hand to such a work as can have no other private end in us, but the deare of the welfare of our people, we

we have thought good in this form onely to require you (as a person of greatest authority in that County, and from whom the generality may receive notice of our pleasure) with more convenience then otherwise, to take occasion either at the *Quarter-Sessions*, or at some other publike place of meeting, to perswade and require such as are of a ability, (without descending to trouble the poor, for whom we seek to provide) to buy and distribute in that County, the number of ten thousand *Mulberry* plants, which shall be delivered unto them at our City of, &c, at the rate of two farthings the plant; or at 6 s. the hundred, containing five score plants. And because the buying of the said plants at this rate may at the first seem chargeable to our said Subjects, (whom we would be loath to burthen) we have taken order that in March or April next, there shal be delivered at the said place a good quantity of *Mulberry-leaſs*, there to be sold to such as will buy them, by means whereof the said plants will be delivered at a smaller rate then they can be afforded being carried from hence; having resolved also in the mean time, that there shal be published in print a plain instruction and direction, both for the increasing of the said *Mulberry trees*, the breeding of the *Silk-worms*, and all other things needfull to be understood, for the perfecting of a work every way so commendable and profitable, as well to the planter, as to those that shall use the trade. Having now made known unto you the motives as they stand with the publick good wherein every man is interesterd; because we know how much the example of our own Deputy Lieutenants and Justices will further this cause; if you and other your neighbours will be content to take some good quantities hereof, to distribute upon your own lands we are content to acknowledge thus much more in this direction of ours; that all things of this nature tending to Plantation, increase, of science, and works of industry, are things so naturally pleasing to our own disposition, as we shall take it for an argument of extraordinary affection towards our person; besides, the judgement we shall make of the good dispositions in all thole that shall expresse in any kind their ready minds to further the same; and shall esteem that in furthering the same, they seek to further our honour and contentment (having been in few years space past, that our brother the French King, hath since his comming to that crown, both began and brought to perfection the making of silks in his Country, where he

he hath won to himself honour, and to his subjects a marvellous increase of wealth) would account it no little happiness to us, if the same work which began among our people, with no less zeal to their good, (then any Prince can have to the good of theirs) might in our time produce the fruits which there it hath done: whereof we nothing doubt, if ours will be found as tractable, and apt to further their own good, now the way is shewed them by us their Sovereign, as those of France have been to conform themselves to the directions of their King. Given under our Signet at our Pallace of Westminster, the sixteenth of November, in the sixth year of England, France, and Ireland, and of Scotland the two and fortie.

**15. Defici-**ency is the ignorance of the Husbandry of other places (viz.) what seeds, what fruits, what grafts they use, what Ploughs, Harrows, Gardening-tools they have; how still they manage and improve their lands; what cattle they have; how they feed and fatten them; and how they improve their commodities, &c.

Husbandry of other places.  
For there is no Countrey where they are such ill Husband-men, but in some particular or other they excel: as we see even in the severall Countys of this Island, every County hath something or other wherein they outstrip their neighbours. And that much profit may arise hence in this nation, is manifested by that excellent Treatise, which is published by you concerning the Husbandry of Flanders; wherein are briefly set down divers particulars very usefull for us here in England, and formerly unknown. And without question, France, Spain, Italy, Holland, Poland, Germany, &c. have many excellent things both for Husbandry, Physick, Mechanicks, worth the maniffting, and very beneficial to us: so likewise there are divers things in our Plantations worth the taking notice of, in Husbandry. To passe by the Southern Plantations, as Barbadoes, Antego, Saint Croix Christopher, Mervis, Monferato, where the commodities are onely Cotton-wools, Sugars, Gingers, Indicoes, which our cold climate will not produce; and all Tobacco which groweth also with us, about Norwich and elsewhere. We will onely fall upon our Northern Plantations, Virginia, New England, and instance in a few things. Why may not the Silk-graft of Virginia, the Salsaparilla, Saffafas, Rattl-snake-root (which is an excellent cordial) be beneficial to us, as also their

Cedars,

Cedars, Pines, Plumatrees, Cherries, great Strawberries, and their Lecasts (which is a prickly plant, a swift grower, and therefore excellent for hedges) be usefull to us? So for New England, why should we think that the Indian corn, the Marsh-wheat, that excellent Ric. the Pease (which never are eaten with magots,) the French, or Kidney Beans, the Pumpions, Squashes, Water melons, Musk-melons, Hurtleberries, wild Hemp, Fir, &c. of those parts are altogether uselesse for us: as also the Cramberries, (which are so called by the Indians, but by the English, Bear-berries, because it is thought the Bears eat them in Winter;) or Barberries, by reason of their fine acid taste like Barberries,) which is a fruit as big and as red as a Cherry, ripe onely in the winter, and growing close to the ground in bogs, where nothing else will grow? They are accounted very good against the Scurvie, and very pleasant in Tarts. I know not a more excellent and healthfuller fruit.

But some will object, that they will not grow here with us, for your fore-fathers never used them. To these I reply, and ask them how they know? have they tryed? Idleness never writ any ex- cuse; and why might not our fore-fathers upon the firste com- minge, held their hands in their pockets, and have said, that Wheat and Barley would not have grown amongst us? and why should not they have been discouraged from planting Cherries, Hops, Liquorice, Potatoes, Apricocks, Peaches, Melicotes, and from sowing Rape-seeds, Colliflowers, great Clover, Canary-leeds, &c. and many more of this kind? and yet we know, that most of these have been brought to perfection, even in our days: for there is a vicissitude in all things, and as many things are lost which were knowne to our fore-fathers, as well the Purple colour, &c. as you may read in Pangroil: so many things are found out by us, altogether unknown to them, and some things will be left for our posterities. For example, not to speak of Gun-powder and Printing, nor of the New-world and the wonders there, which notwithstanding are but of a few 100. years standing: I say twenty Ingenuities have been found even in our days, as Watches, Clocks, Way-wifers, Chains for Fleas, divers Mathematical Instruments, Short-writing, Microscopes, by the which even the smallest things may be discerned, as the egs, cys, legs and hair of a Mite in a Cheeke: Likewise the Selenoscope, which discovereth mountains in the Moon, divers Stars, and

new

new Platets, never seen till our days. But to return to our pur pose, I say that in Husbandry it is even so ; for the Ancients used divers plants which we know not ; as the *Cytilus* tree, so much commended for Cattel ; as also their Medick fodder, which *Colum* saith endureth 10. years, and may be mowen 4 years, 7. times in a year, and one Acre he esteemeth enough for 3. hortles. This fodder likewise is accounted very sweet and healthfull, whereas the plants which are usually called Medicas with us, are annual plants, and have no such rare proprieties. So we are ignorant what their Far or fine Bread Corn was, what their *Lupine*, *Spiry*, and an hundred of this kind, as you may read in *Martial*, or *Dioscorides* : so on the contrary, infinite are Plants which we have, and they knew not, as well appeareth by their small and our large Herbals ; and dayly new Plants are discovered, usefull for Husbandry, Mechanics and Physick ; and therefore let no man be discouraged from prosecuting new and laudable ingenuities. And I desire Ingenuous Gentlemen and Merchants, who travel beyond Sea, to take notice of the Husbandry of those parts (*viz.*) what grains they sow ? at what time and seasons ? on what lands ? how they plough their lands ? how they dung and improve them ? what Cattel they use ? and the commodities thereby ? also what books are written of Husbandry, and such like ? and I intreat them earnestly, not to think these things too low for them, and out of their callings ; nay, I desire them to count nothing trivial in this kind, which may be profitable to their Countrey, and advance knowledge. And truly, I should thank any Merchant that could inform me in some trivial and ordinary things done beyond Sea, (*viz.*) how they make *Caviaire* out of Sturgeons Rows ; in *Muscovia*, how they boil and pickle their Sturgeon, (which we English in *New England* can, not as yet do handsomely ?) how the *Bologna* Sausages are made ? how they ferment their Bread without Yeft ; of what materials divers sorts of Baskers, Brooms, Frailes are made ; what feed Grout or Gruze is made of ? and also how to make the *Parmisane* Cheeses of *Italy*, which are usually sold here for 2.s. or 2.s. 6.d. per pound ; or the Angelots of *Fraunce*, which are accounted better Cheeses then any made in *England* ; as also the *Holland* Cheeses, which are far better then our ordinary Cheeses, and yet these sorts of Cheeses are made not of Mares milk, as some think, but from the Cows

Cows, and our Pastures are not inferior to theirs, &c.

2. I desire ingenious men to send home whatsoever they have rare of, sorts ; as first, Animals, the fine-woolded Sheep of *Spain*, *Barbary* Horses, Spanish Jennets, &c. and so likewise all sorts of Vegetables not growing with us, as *Pannick*, *Millet*, *Rice*, which groweth in the Fenny places of *Millan* ; and why may it not grow in our Fens, and the best sorts of Grains or Fruites will amongst us, perhaps there is Wheat that is not subject to Smut or Mildew ; perhaps other seeds will give double increase, as Flax, Oats, Pease ; and divers other things of importance there are beyond Sea, which may be useful to us ; as the Askeys, the Cork, Acorns, the Scarlet-Oak, sweet Annise, which groweth abundantly in *Millan*, *Fenel*, &c. *Tilia* or Linden-tree for bast Rothes, &c. Spruce Pines for Mats and Boards, seeing that they are swift growers, and many will stand in a small piece of ground : they have formerly grown here, and some few do flourish in our Gardens, and in *Scotland*. I suppose that this ought seriously to be considered : for although we have plenty of Oaks, yet what will it profit for Shipping without Mats ? and how difficult it is to get great Mats above 22. inches diameter, is very well known. Many things I might add of this kind, but for brevities sake I refer you to Master *John Tredejean*, who hath taken great pains herein, and daily raitheth new and curious things.

3. Consider that these new Ingenuities may be profitable, not only to the Publick, but also to Private men : as we see by those who first planted Cherries, Hops Liquorice, Saffron, and first sowne Rape-seeds Colliflowers, Woad, Would, Early Pease & Spargagus, Melons, Tulips, Gilliflowers, &c. and why may we not find some things beneficial to us also ?

16. *Deficiency is the ignorance of those things which are taken & Deficiency of the Earth and Water in this Island.*

Although it may seem to many that these things do little concern the Husbandman, who usually is not a Naturalist, but onely indeavourth to know his own grounds and the seeds proper for it and seldom pierce into the bowels of the earth ; yet if we consider that out of the earth he hath Marle, Lime-Stone Chalk, for thinching his lands ; and also Loam, and Sand for his buildings, & sometimes fuel for fire, &c. it will plainly appear, that it is necessary for

for him to know all subterrany things, and to be a Petty Phylosopher, and that the knowledge of them things will be very beneficial for him. And here I cannot but take notice of a great deficiency amongst us, (viz.) that we have not the natural history of all the Sands, Earth, Stones, Mines, Minerals, Metals, &c. which are found in this Island: it wold not only advance Husbandry, but also many other Mechanick Arts, and bring great profit to the publick. I hope some ingenious man will at length undertake this task; for the Lord hath blessed this Island, with as great variety as any place that is known, as shall in part appear anon; and it may be proved by that great variety which is found near the Spaw waters in Knaresborough, as Dr. Dean relateth in his Book called the English Spaw: Or the glory of Knaresbrough, springing from several famous fountains there adjacent (called the Vitriol, sulphurous and dropping Wells) and also other Mineral waters, whose words are these: Here is found not only white and yellow Marle, Plaster, Oker, Rudd, Rubrick, Freestone, an hard Greet-stone, a soft Reddish stone, Iron stone, Brimstone, Vitriol, Niter, Allum, Lead, and Copper: (and without doubt divers mixtures of these) but also many other Minerals might (perhaps) be found out by the diligent search and industry of those who wold take pains to labour a little herein.

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This Letter will not permit me to make a compleat *Natural History* of the things of this Isle; yet I shal relate divers things which may be as hints to set some others to work, which I have found in Mr. Cambden and others: and shall briefly instruct the Husbandman what he ought to take notice of, for his own and others good. And first, if he live nigh the Sea, let him take notice of those things the Sea casteth up; for it hath even with us cast up Amber, greece, which is worth so much Gold; with the which not long since a Fisherman of Plymouth greaded his boots, not knowing what it was: sometimes it casteth up Jet and Amber, as at Whitsby oftentimes. In former times we had Oysters which had very fair great Pearls in them of good worth; and at this time some of them are found

found in Devonshire; Copperas is found along by the Sea-Coasts of Kent, Sussex, Hampshire, out of the which Copperas is made; a thing very useful for Dier, Curriers, &c. further Sea-weeds are not to be slighted; for in Jersey they have no other fuel amongst them; and here in England it is burnt to make Kelp for Glassemen, and is also very good manure for divers Lands; also Sea-salt is not only good to lay on Land, but at Dover, and other places, the Inhabitants make Brick thereof, called Flambards-Bricks &c. Sea-lands in Cornwall do very much enrich their Lands; and in Cumber-land out of a certain kind of land they extract Salt, &c.

2. Let him take notice of all sorts of waters, which issue forth of the earth, differing from the ordinary, in Colour, Odour, Taste: for it is well known, how advantagious these waters are; often-times, not only to particular men, but also to the Countrey about; yea to the whole Island, as appeareth by the waters of Tunbridge in Kent, and of Epsom in Surrey, Knaresborough, Spaw in Yorkshire, and by the Alum-waters in Newenharn in Warwickshire, like Milk in taste and colour, and are excellent for the Stone and wounds; and also it appeareth by the salt Fountains in Worcestershire and Cheshire, which furnish all thole parts, with an excellent fine white salt: by the hot baths in Summer-shire, and the luke-warm waters by Bristol, &c. At Pitchford in Shropshire, is a fountain which catteth forth liquid Bitumen which the people use for Pitch, &c.

3. Let him not despise the sorts of Sands, which he findeth; for some Sands are for buildings, as the rough sorts; others for scowring, others for casting fine metals, as Highgate sand; others for the Glasse men, as a land lately found in Sussex. In Scotland there is a sand, which containeth a considerable quantity of Gold; and in divers Countries fine Gold aboundeth very much in lands; and if we may believe an excellen: Dutch Chymist, there is scarce any sand without it.

4. Let him take notice of the Earth, Loames, Clayes, &c. which have divers and necessary uses; as first, the stiffe Clayes, as New-Castle and Non-such, are for the Glassemens Pots, for Crucibles, melting pots: the leſſe ſtiffe for ordinary Earthen wares. Brewers, vites, Bricks, &c. white Clay is for Tobacco-pipes: Marls of divers colours and ſifted is excellent for Huf-pipes: Marl of divers colours and ſifted is excellent for Huf-pipes: band

*band-men*: *Fuller's Earth* is found in *Kent*, *Surrey*, and lately in divers other places, for the great benefit of the *Clothier*: *Rub* and *Rubrick* in *Tork-shire*, & also divers other in *Oxford* and *Gloucester-shire* excellent for *Painters*, &c. *Tarffe* for firing may be found in most parts of this Isle, if people were industrious: necessity now and then compelleth them to be inquisitive, as it did lately at *Oxford* and *Kent*, where it is found in good quantity, in *Holland* they have little fuel, save what is taken out of their ditches, and therefore it is truly said, that their firing is as it were fish'd out of the water, and its indifferent good fuel: *Coales* are found in very many places, yet divers places are in great want of them.

5. Let him take notice of the several stones found in this Isle, as of *Frestones* for buildings; *Cobbels* and rough hard stones for paving, *Tomb-stones*; soft sandy stones commonly called *fire-stones*, because that they will endure strong fires, and therefore fit for *Iron* furnaces; and this property these soft stones have, that when they are white hot, a steel instrument will scarce touch them to hurt them. *Alabaster* is found at *Burton* on the *Trent*, and in *Staffordshire*, and a *Titbury-Castle*: excellent *Marble* at *Snethill* in *Herefordshire*: a coarse *Marble* near *Oxford*; in *Kent*, also at *Purbrick* in *Dorsetshire*, *Milstones* in *Anglesey*, in *Flimshire*, *Derbyshire*, *Lime* stones: *Chalk* in very many places, for divers uses: *Allum-stone* is found in *Anglesey*, but especially at *Gisborow* in *Torkshire*, where the *Allum works* are, which serve this Isle: *Lapis Claminalis* is lately found in *Somersetshire*, by the which Copper is made brasse: *Manganese* for those that make white glasse, lately found in the North: the best *Emery* for polishing *Iron* in *Jersey*. *Plaster* at *Knaresborough*: *Black-lead* in *Cumberland*, and no where else in Europe: There is a stone in *Durham* out of which they make salt; *Diamonds* are found about *Bristol* and *Cornwall* very large, but soft: There is a stone near *Beaver-Castle* like a Star, in *Yorkshire* another like a Serpent petrified: and also other stones round like bullets, which being broken have as it were a Serpent in them without an head, &c.

6. Of all Minerals and Metals, *Iron-stone* is found almost in every County, and is profitable where Wood is plentiful: the best is found in *Lancashire*, one load and a half making a Tun of Iron: it hath been transported into *Ireland*, to mix with poor *Alme*. In *Richard* the 2. time a *Copper-Mine* was found in *Wenlock* in *Shrop-*

*Shropshire*, but exhausted: in Queen *Elizabeths* dayes one was found at *Kefwick* in *Cumberland*; and lately in *Staffordshire*, *Tork-shire*, and near *Barstable* in *Devonshire*, on which some Gentlemen intend speedily to work: *Lead* is found in *Durham* wall and *Devonshire*: *Brimstone* in *Tork-shire* and *Wales*, *Antimony* in *Staffordshire*: a silver Mine in *Cardiganshire*: a gold Mine was discovered in *Scotland* in King *James* his time: and many rich Mines, might be discovered in *England*, if that the Kings prerogative (which was to take all Royal Mines to himself, *viz.*) *Silver*, *Gold* and *Copper*) were so certainly abolished, that they which should find these Metals in their own Lands, might safely digg them. But some will object and say, that many things are of little worth and profit. To these I answer, that God hath made nothing in vain, every thing hath his peculiar use, and though some things seem to be of little worth and contemptible, as *Sand*, *Loam*, *Chalke*; yet it hath pleased the wise Creator to make these things very necessary for mans comfortable subsistence, which they that want these things can testifie: As for example, in *New England*, where there is no *Chalke* nor *Lime-stone*, they are compelled to burn *Oyster-shells*, *Cockles*, to make *Lime*; or else they could hardly build any houses. The like I may say of *Sand* and *Loam* in divers places, where they are wanting.

2. I say that most of those things I have spoken of, are very profitable in one place or other. To instance in some of the meaner sort, at *London Bricks* give 50*l.* per Acre, only for Loam to make Bricks, and pay 3*l.* per Acre, of yearly Rent, and are to leave the Land worth the same yearly Rent; likewise I know a *Chalk-cliffe* in *Kent* not two Acres of ground, valued at many 100*l.* and that one Column of *Chalk* which is 10. foot square, is valued at 40, or 50*l.* at 8*d.* per load. The *Oker* Mines of *Oxford* and *Gloucester-shire* are of great value, and so would others of that kind, if they could be found; so is the *Black-lead* Mine. Also the pits of *Clay*, *Marle*, *Coale*, *Turfe*, &c. And therefore I desire all Country men to endeavour to know all sorts of Stones, *Clayes*, *Earths*, *Oares*, and to teach their Children the use of them, that they may know that this sand is for building, this Loam for Bricks, this Clay for Pots, this Marle for *Corneland*: and if that they shall find any Stones, *Earths*, which they know

68 The ignorance of the Vewe of this Iland,

not, that they would lay them up, till that they meet with some ingenious man, that can inform them. The richest Mines of the world, have been found out by these meaneas, if we will believe Histories. And this I am sure of, that by this racans, they may much advance their knowledge, and be more profitable to the publicke, their Neighbours, and also to themselves.

17. Deficiency is the ignorance of the Vegetables of this I-

land, and their Virtues and Vses.  
27. Def. Iland, and their Virtues and Vses.

And the first Deficiency that I take notice of, is the ignorance of the Vewe of the ordinary seeds which are commonly sowne amongst us; for usually the Countryman contenteth himself with one or two sorts, and knoweth no more, when as there are very great varieties; some of which agree with one sort of ground, some with another: as for example, there are very many sorts of Wheates, some called Vyses. White Wheat, some Red Wheat, some Bearded, (which, as I have said before, is not so subject to Mildews, as others) others not: some sorts with 2. rowes, others with 4. and 6. some with one eare on a stalk, others with double eares, or 2. on the same stalk; red stalk Wheat of *Buckinghamshire*, Winter Wheat, Summer Wheat, which is sownen abundantly in *New-England*, in *April* and *May*, and reaped ordinarily in 3. moneths; and many sorts more. Not to trouble my discource with *Spelt*, *Zea*, *Tipkine-Wheat*, or *Olew*, *Far*, *Sligo*, *Alica*, which were siled amongst the Auntients; but now unknown not only to the Countryman, but even to the learnedest Botanicks: so I may say that the ordinary Yeoman is ignorant of the diversities of *Barley's*, for there is not only the ordinary *Barly*, but also big sprat-Barly, which hath late-ly been sownen in *Kent* with good profit; also Winter-Barly sownen in Winter, Barly with 4, 6, rowes, naked Barly, which require divers dispositions in Land: some delighting in finer, others in rough grounds. So there is also Winter and Summer-Rie, and 20. sorts of Pease, the ordinary Snew, the Raith or Early-ripe Pease, the Rencivals, Hestivers, Hotartes, Gray-Pease, Green-Pease, Pease without skins, Sugar-Pease, whose shels are sweeter than the Pease it selfe, and have been within these 10. years plentifully sownen in *Lincolnshire* with profit; also *Fulham*, *Sandwich*, Peale, &c. which require divers sorts of land and seafons: so also there are divers sorts of Oats, white, black, naked, which in *New England* serveth

and their Vertues and Vses.

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serveth well for Oatmeal without grinding, being beaten as they come out of the barn; *Scotch*, *Poland*, &c. Also Buck-wheat, Lentiles, divers sorts of Tares, of Hemp and Flax, altogether unknown to most Countreymen, but I hope that hereafter they wil be more inquisitive after them: for divers of them may be of good use on their laness.

2. Deficiency in this kind, is, that they are ignorant of the Plants and Graffes which naturally grow among us, and their Utes, which likewise were made for to be food for Cartel, and also for the service of man. This ignorance causeth them to admire, and to esteem even as miraculos, ordinary and trivial things; as for example, how it cometh to passe, that in one Meddow an Horse thriveth very much and speedily, and yet a Bullock will not in that place; and contrariwise in a Medow close by the former, the Bullock will thrive, and the Horle not: so also how it commeth to passe that Conies and Sheep will thrive well, where there is scarcely any Pature, and yet come to nothing on Commons, where there is a greater quantiy of Pature; which procedeth from this cause, that some kind of Plant are more agreeing and sweeter to one sort of Cartel than to another, and every Beast almost hath some Plant or other, which they love exceedingly. I suppose, that the obseruances of this kind, might be very usefull in Husbandry. These Deficiencies I will draw to three Heads.

1. I say that divers Plants (not to speak of Fruits, because we have already looken of them) that grow naturally in our Iland, may be very serviceable to the Husbandman, both for his Pastures and Corn-lands. To instance in some few: we see that divers sorts of wild Vetches, Chickes, Tares, &c. grow wild in divers places which though they bear not so great and large crops, as some others alreadie used; yet who knoweth what they would do, if they were manured as other grains, and in land proper for them: for we see that the transplanting of Plants into gardens, doth very much meliorate or better them; and without doubt all those grains which are in use with us, were at first picked out of the fields and woods; and by ingenious men found usefull for man or beast, and of late divers have been found not known to our forefathers, as Sain Foin Lucern, and why may not we find divers Graffs, Vetches, Medicas, Wild Pease, &c. which as yet are scarce taken notice of.

K 3

There

2. There grow divers sorts of wild Pease, but to speak of two only.

1. Sort which groweth on the stony beaches of the sea, where there is little or no earth, the roots are many foot deep in the ground. In Queen *Maries* days in a dearth, the poor people gathered divers sacks full of them, and they were no small relief to them, who hath tried whether they would thrive better on barren land?

2. Sort growth on dry barren land, and is commonly called the everlasting Pease; which continually groweth out of the same root. In Gardens I have seen it grow 10 years together, and larger at the 10 years end, than at the first. I have also seen it flourish on barren grounds, where Oats were burned away: who knoweth but these and other Plants may be serviceable, if not for man, at least for beasts or Pigeons; for in New-England the great flights of Pigeons are much maintained by these, I am sure it were good to make experiments of these and divers others.

2. Head is the *Ignorance of the Mechanical uses of Herbs and Trees*, for even for these uses most Plants have some peculiar propriety. To instance in a few. We know that Elm is for wheelis; and the best wood to make Herrings red, Oak is for the Skipwright, Joyner, Tanner; Hornbeam, Beech, for the Milwright; Lime-tree for bals-rope; old Elder without pith is very tough and fit for Cogs of Wheels, Tooth-pickets; Pear-tree for Mathematical instruments and engravers, &c. Oifers for baskets; Walnut for Gunstocks; Ash for Hoops; Box, Ash for a 100 uses; and much more might be spoken of this kind, if time would permit. So likewise divers Plants are for Painters, as you may see in *Batistes* experiments: some for the Dyers, but as yet we know but four, (viz. Woad, Wound, Green-wood, and Madder) amongst 1200 Plants & upward, which grow wild with us. I could wish some ingenious man would take the pains to search out the *Mechanical uses of Plants*; surely it were a good way to advance Mechanicks, who in their callings usually go round; as horses in a mill, and endeavour very little to advance or know the causes of their operations. I know a Gentleman, who promiseth some things in this kind, and I hope will be as good as his word.

3. Head is the ignorance of the *very Physical uses of Plants*: for though

though many hundred Plants do grow amongst us; yet but few of them are used Physically: whereas there is scarce any one but may be usefull in this kind. And truly in my opinion it is a great fault that we so much admire those things, that are far fetched and dear bought; when as oft-times they are gathered in unseasonable times, and corrupted by long voyages by sea, counterfeited by Merchants; yea we have very oft *quid pro quo*, and rank poisons, and do neglect those medicines which God hath given us here at home. I am credibly informed that in former times, *Virga aurea* was in great use with us, and usually sold for eight pence per ounce, and brought from France: but so soon as it was found growing plentifully in our hedges, it was cast forth of the Apothecaries slops, as of little vertue. And though some will object, that our Plants have little vertue, I say its false; for God hath tempered them for our complexions: and we see very oft that one simple medicine doth more good then the great compositions of the ancients, which are rather *ad pompa* then for health, and seem to favour somewhat of the *Mountebank*; because *Opium* is always an ingredient. And further we see, that where any Endemical or National disease reigneth, their God hath also planted a specifique for it: As the *Cochlearia* or *Scurvy-grasse* for the *Scurvy*, in the *Baltick Sea*, where it is very frequent, and also in *Holland*, *England*. So in the *West-Indies*, (from whence the great *Pox* first came, and where it reigneth very much, that not only man, but other Creatures are infected with it, so that even *Dogs* die of that disease in our *Northern Plantations*, perhaps catching this infection, by mingling with *Indian Dogs*,) there grow the specifiques for this Disease, as *Gujacum*, *Salaperilla*, *Sassafras*, and the *Salavages*: do easily cure these distempers. Further we see, that even the irrational Creatures, can find not only meat, but also Medicines for themselves; as the *Dog*, *Couchgrass* for a vomit; the *Dove*, *Ver-vein*; the *Weasle*, *Kue*; the *Swallow*, *Celandine*, the *Toad Plantine*; and where is our reason that we cannot?

I therefore desire all Countrey people, to endeavour to know thele Plants which grow at their doors: (for God hath not planted them there for no purpose; for he doth nothing in vain,) and to collect together the plain simple *Medicaments* of their *Grandams*; by this means they may save many a 40, pence: I mean

mean preserve themselves and Families, and Neighbours, in good health. Some small Treatises have of late been written, to shew the use of our Plants in Physick; and I hope ingenious men will dayly more and more communicate the secrets of this kind, which they have in their hands, for the publicke good.

**181 Def.** They that write of 4, foored beasts, do reckon about 120. species of them : half of them are scarcely known amongst us. I do suppose therefore, that divers species are wanting, which may be useful. To instance in some : And

1. To begin with the *Elephant*, the greatest, wifest, and longest lived of all Beasts : which abound very much in the Eastern parts of the world ; as *China*, *India*, and are accounted very serviceable, both for the Warres, and for carriage (15. men usually riding on his back together) they are not chargeable to keep ; why may they not be of use even here, when I am credibly informed, an *Elephant* lived divers years here in a Park ? so that they can endure the coldness of this Climate.

2. The *Buffe*, which is as big as an *Ox*, and serviceable both for the Plough, and for their Milk : their skins make the best *buffe*, they will fare very hard, and live in *Fens* and *bogs*, where nothing else can. In the Duke of *Florence* Countrey near *Pisa*, are many of them.

3. The honest and patient *Axe*, which was very much used in the old time for carriage, (as the Horse for the War, and the Ox for the Plough,) and in many Countries at this time ; they will eat Thistles, and live even with nothing. They may save poor men (who are not able to keep an Horse, because he is a great feeder,) much labour.

4. *Mules*, which is a very strong and proud beast, and will carry far more then an Horse, and are more sure footed. I suppose, that they might be serviceable to the Carriers here, as they are beyond the Seas.

5. Black *Foxes*, may be profitable ; whose skins have been sold from 20*l.* per skin to 90*l.* I might add divers more of this kind : as *Muske-Cats*, *Sables*, *Martines*, *Minkes*, *Musk*, *Quash*, *Guiney Pigs*, and a sort of *Coupi*, which some few have in *Hampshire*, whose *Fur* is worth 2*s.* 6*d.* or 3*s.* per skin, being little inferior to *Beaver*, &c. but for bivvies take I passe them over : also

also divers sorts of Fowls, of good use ; as a kind of Duck with a crooked bill, which layeth constantly as Hens do, as also Hawks of divers sorts of good value, which perhaps the Countryman loveth not, because they are enemies to his Poultry.

2. *Deficiency* is, that we do not endeavour to advance the best kinds of this Cattle, which are amongst us. And

1. To begin with horses. The French-man that writeth a book called the *Treasure politiek*, saith, that in England in Queen *Elizabeth's* days, we had not above 3 or 4000 horse worth any thing for the war, and those only in Noblemen's stables, which thing perhaps did the more incourage the Spaniard to invade us ; but at this time we are known to have very many thousand of horse not inferior to the best in the world : yet I suppose, that we might much meliorate our breed by Spanish Jennets, Barbary, &c. And we are not so careful to increase good horses as we should be.

2. We are too negligent in our kine, that we advance not the best species : for some sorts give abundance of milk, and better then others : some sorts are larger, more hardy, and will sooner fat, &c. *Lancashire* and some few Northern Counties, are the only places where they are a little careful in these particulars.

3. We are not curious in procuring the best sorts of sheep, for greatness, soundnesse, and fine wool. I wonder that some of our sheep masters have not procured of those exceeding fine-wooll'd sheep of Spain ; whose wool costeth the Merchant nigh 10*s.* per pound, before it is exported : I suppose that it would, for a time mend our wool, if not continue so for ever : for these sheep were first carried forth out of England, if we may believe stories, *Spain* not affording such sheep before. Dutch sheep, are reported to have two or three Lambs ordinarily. Dutch sheep are very great, with great tails ; but their wool is very course, not only because of their course feeding, but also because in hot countries, they ordinarily mingle with Goats, and therefore in *Venice* ordinary Porters will scarce eat any Mutton. And here I cannot but relate, that all strangers very much wonder at 2 things in our sheep, (not to speak of the finenesse of wool.) And

1. That our sheep if they be found, seldom or never drink, even in Summer ; though they go on the driest Chalky lands : as it plainly appareth in Kent, where there is scarce water for the great

*Animals.*

Cattel, which proceedeth from the moisture of our air, and abundance of rains and dews.

2. That our sheep do not follow their shepheards as they do in all other Countries : for the Shepheard goeth before, and the sheep follow like to a pack of dogs, this disobedience of our sheep, doth not happen to us, as Papist Priests tell their simple flocks; because we have left their great shepheard the Pope; but because we let our sheep range night and day in our fields without a shepheard; which other Countries dare not for fear of Wolves and other ravenous beasts, but are compelled to guard them all day with great dogs, and to bring them home at night, or to watch them in their folds.

3. *Deficiency* in this kind, is the neglect of Fish ponds, which are very profitable ; for fish usually live by such worms and flies as are ingendred in the ponds, and require no charge. Concerning the ordering of them, and the profit of them, read Mr. *Vaughans Golden Grove*. And surely it would be a great benefit to this Island, if we had fish at reasonable rates. I cannot therefore passe by two extream abuses, which exceedingly destroy fish, and are in no wise to be permitted.

1. That divers poor men keep many Swine, and in nets, or otherwise catch many vessels of the young fry of fish and feed their Swine with them.

2. That the Fishermen in the River have the measles of their nets so freight, that they take many sorts of fish, when they are too small, and do destroy more fish than they take. I hope these abuses will be reformed with all severity. To this head I may add Decoys, which are very frequent in Holland, and profitable; but very rare with us in England : yet it may be very profitable and lightfull.

4. Deficiency, is the ignorance of the insects of this Island. And though it may seem ridiculous to many, to affirme that *Maggots*, *Butterflies*, should be of any importance ; yet I desire them to consider, that we have our Honey, the sweetest of foods from Bees, which are Cattel of this kind : also all our *Silks*, *Satines*, *Plushes*, and bravery from the poor *Silk-worm*, which may be called a *Maggot*, *Caterpillar*, or *Butter-flie*, &c. the richest of our Colours from the *Cochineal*, which is one of this sort. *Gummosus* is made

*Diseases of Cattel, and their Cures.*

by *Aunts*, some are used for food, as *Looches*, &c. as you may read in *Masse's Book de Insects*. Many of them likewise are used in Phyfick, as *Cantharides*, *Wood-some*, *Lice*, &c. Some thin k, that Medicines transcending even the *Chrysists*, may be had out of theft ; for every Plant, which hath a Medicinal vertue, is also sublimed up into this living Quintessence : and therefore I command divers ingenious men, as Mr. *Marshall* and others, who have collected many hundred sorts of these ; and I hope they will communicate ere long their experiments to the world.

19. *Deficiency concerning divers things necessary for the good Divers*  
of Cattel.

1. That we are ignorant of the divers Diseases of Cattel and their Cures. Nor to runne over all the diseases of Cattell and things necessary for the good of Cattel, Mr. *Markens* works, the Country Farmer, and others. I will instance only in two, which somo years sweep away Cattel, as the Plague doth men, (*viz.*) the Murraine amongst great Cattel, and the Rot amongst Sheep. And though divers have wrote concerning the Cures of these Diseases ; yet we do not find that effect which we desire : and therefore I hope some will attempt to supply this Deficiency, and write a good Treatise about the Diseases of Cattel. Of these 2. Diseases, I shall briefly declare my mind :

1. Of the Murraine, which proceedeth from an inflammation of the blood, and causeth a swelling in the throat, which in little time suffocateth the Cattel. The especial Causes of this Disease, are an hot and dry season of the year ; which dryeth up the waters, or at least doth to purifie them, that they are unwholsome ; and also the letting of Carrion lie unburied. This Disease is thought to be infectious ; but perhaps it may proceed from one common cause, as the rotteness of Sheep. The best way to keep your Cattel from this Disease, is to let them stand in cool places in summer, & to have abundance of good water, and speedily to bury all Carrion ; and if any of your Cattel be infected, speedily to let them blood, and to give them a good drench, &c. by these meanes divers have preserved their Cattel ; when their Neighbours have perished.

2. Concerning the rot of Sheep, not to speak of the Pelt-rot, or Sheep

Sheep that are starved; byz of the ordinary rot, called by some the white rot, and is a kinde of dropsie, their bellies are full of water, and their liver discoloured. I have seen out of the livers of sheep tending to rotteneſſe, living Creatures, leaping like small *Fleunders*; which without quellion in little time will destroy the liver, and consequently produce an indisposition not unlike to the Rot. The common people lay, that these worms are caused by the over-heatings of sheep, and that Rottenneſſe procedeth from a plant called *Coyledon*, or *Marsh Penny-wort*, which is of a very sharp taste, and therefore not likely that sheep will eat it; but it may be a ſigne of wet rotteneſſe Land, as broom is of ſound and dry land. This is certain, that in wet moift years, ſheep die very much of the Rot; and in dry years on the ſame ground, they hold ſound; and yet I have heard that in *Ireland*, which is far moiftier than *England*, rotteneſſe of ſheep is not known. It were therefore well worth the labour of an ingenious man, to inquire into the cauies of theſe indispoſitions in ſheep.

The meaneſs, which have been found very eſſeuaſl for the curing of theſe Diseases, are theſe; firſt, to drive your ſheep up to dry Lands, or to keep them in the fold, till the dew be off the graffe, or to feed them ſome dayes with fine dry hay, eſpecially of ſalt Meadow, or to put them into ſalt Marphaes; for in theſe places ſheep never rot, or to drive them to ſome ſalt River, and there to waſh them, and make them driak of the water, this will kill the ſkab, and alſo the ricks, and faſten the wooll; but if you haue not the conuenienties before laid, then rub their teeth with ſalt, or rather make a ſtrong pickle with ſalt and water, and force them to drink thereof. Some dry Pitch in an Oven, and add to the pickle, and haue found very good ſucces: for theſe Medicines do exſiccate the ſuperfluous humerites, open obſtructions, and kill worms. Some commend the Antimoniaſ Cup, as a catholick Medicine againſt all Diseases of cattel.

2. We are ignorant of divers ingenuities, concerning feeding and fatting of Cattel and other Creatures. To instance in ſome; And

1. Of the Horſe who is a great feeder. In *Kent* and *Hartfordshire* they uſually cut all their Oats and Peafe inall, and give them with their Chaffe; by this means the Horſes sooner fill themſelves

ſelves; and eat all the straw up: ſome put his Horſe-meat into a bag, and fo order it that a little only lyeth in the Manger; which when that is eaten up, more falleth down, and not before; by this way Horſes do not blow their meat, nor throw it out of the manger with their Noſes. A further good pece of Husbandry they uſe, which is this, when their Horſes are well fed at night, they fill the Rack with Wheat or Barly-straw, and ſo leave them; the Horſe perciyng that that which is in the rack is not very pleauant, lyeth down and taketh his reſt, which is as good to him as his meat: if he riſe in the night, and fall to the rack and manger, as he uſually doth, and findeth nothing but straw, he ſleepeth till the morning; but if it be Hay, Tares, or Peafe, the Jade will pull it all down and ſpoil it, and likewiſe will be hindred from his reſt; by the which double damage doth infue. *Currying* and dressing of horſes ought not to be forgot, it is half as good as their meat. Brimſtone and Elecampane roots are the eſpecial ingredients for this Physick. 2. Of the feeding & fatting of Cows. We uſually feed Cattel with straw in racks in the yard, or turn them to the fields, and there let them feed as much and how they pleaſe; which hath many inconveniences: as firſt, Cattel ſpoil as much with their heels as they eat, eſpecially if the ground be moift, or if the Flie be very troublorne, and they blow and ſtench and tumble much, and if the Flie be buſie they run up and down, and overheat themſelves, and fat very little, ſo that oftentimes in *June* or *July* they fatten as little as at Christmas, and moft of their dung is loſt by theſe meaneſs, &c. But in *Holland* they do thus: They keep their Cattel houſed winter and summer; for the Winter-provision, they lay in not onely hay, but alſo grains;) which they buy in Summer, and bury in the ground;) and alſo Rapeſeed Cakes, and ſow Turneps, not onely for themſelves, but their Cows alſo; with the which Turneps being ſlicced, and their tops, and Rapeſeed Cakes, and grains, &c, they make meſhes for their Cows, and give it them warm; wch the Cows will flop up like Hogs, and by this means they give very much milk. In the Summertime they mow the great Clover graffe, and give it them in racks, ſo that their Cattel are not troubled with the pinching froſts nor rains, nor with the parching Sun in Summer, neither with the Flie, nor do they overheat themſelves or ſpoil half ſo much meat; and are always as fat

as their Masters, or Bacon-hogs. The Dung and Urine they charily preserve, and thereby keep their meadows of Clover-grasse (which are constantly mowen twice or thrice yearly) in good heart: and indeed Cattel ought not to go amongst Clover-grasse, because it usually groweth with long Haun (as they call it) like Pease, which if it be broken will not thrive. In Bermudas they have a peculiar way of fattening their Cattel, nor used any where else that I know, which is with Green Fennel, that groweth in that Island plentifully.

There is a plant in Essex called Myrrhis or Cow-purley, which groweth fast and early in the spring, which they give their Cattel at the beginning of the year, and they eat it well.

It is an ill custome that is used almost every where, to let Hogs lie in their dirt and dung, when they are fattening; for all creatures generally do hate and abhor their own dung: and an hog is the cleanliest of all creatures, and will never dung nor stale in his stie, if he can get forth, which other creatures will; and though he tumble in the dirt in Summer; yet that is partly to cool himself, and partly to kill his lice, for when the dirt is dry, he rubbeth it off, and destroyeth the lice thereby.

Sir *Hugh Plat* in his writings setteth down divers ingenious ways of fattening Poultry, &c, and more may be found out daily. The Jews have a peculiar way of fattening Geese, with Milk, Figs, Raisins, and other sweet things, by which they make the liver of an extraordinary greatness, and is a dish much valued by them.

In Moor-fields there is one that keepeth many hundreds of Cosneys with grains and bran: and some others who keep the great laying Ducks, with these things and blood, to their great advantage. I have seen a book translated out of French, which teacheth how to gain divers hundred pounds per annum, by fifty pould stock in hens. I suppose about London where Eggs are so dear, great profit might be made by them. Turkeys may be kept with good profit, where there are many Meadows as in Suffolk. In Barkshire many keep tame Pheasants, and have gained well thereby.

3. We do not know how to improve the commodities proceeding from

from Cattel to the highest: as for example our ordinary butter might be better scented and tast'd: some Ladies have fine ingenuities in this kind. We cannot make Cheese comparable to the Parisian, nor so good as the Angelots of France, our ordinary Cheeze is not comparable to the Holland Cheeses, where also divers sorts of Cheeses are made of divers Colours: but I cannot much commend their green Cheeses, which are made of that colour by Sheeps-dung, &c, but I hope in short time our good Housewives wil scorn that any shall excel them.

20. *Deficiency, Is the want of divers things, which are necessary, for the accomplishment of Agriculture.* As

1. That we have not a *Systema* or compleat book of all the parts of Agriculture. Till the latter end of Queen Elizabeth's reign, I suppose that there was scarce a book wrote of this subject, which are days, I never saw or heard of any. About that time: *Tusser* made his *usefull* *for the accomplishment of Agriculture*, and *Seet* wrote about a Hop-garden, *Gouge* translated some things. Lately divers small Treatises have been made by divers, as *Sir Hugh Platts*, *Gab. Platts*, *Markham*, *Blich*, and *Butler*, who do well in divers things; but their books cannot be called compleat books, as you may perceive by divers particular things, not so much as mentioned by them. The Country Farmer translated out of French is enough; but its no ways framed, or squared for us here in England: and I fear the first Authors went on probabilities and hear-says rather then experience. I hope some ingenious man will be encouraged, to undertake a work so necessary and commendable.

2. *Deficiency* is, that Gentlemen try so few experiments for the advance of this honest and labourious calling; when as many experiments might be made for a smaller matter; for half a Pole square, will give as certain a demonstration, as an Acre, and a pot-hole as a Hog-head. I hope in time there will be erected a College of experiments, not only for this, but also all other Mechanicall Arts.

3. *Deficiency* is, That Gentlemen and Farmers do not meet and communicate secrets in this kind, but keep what they have experienced themselves, or known, from others; as *Sibylle's leaves*: I mean as rare secrets, not to be communicated. I hope that we shall have a more communicative spirit amongst us ere long. And Sir I can-  
not

80 Want of Gods Blessings upon our Labours

not but desire you, if you have any things more in your hauds of Gabriel Platts, or any mens else, that you would with speed publish them.

4. Deficiency is, That we want a place to the which men may resort for to find such ingenious men, as may be serviceable for their ends and purposes; and also know where to find such seeds and plants as they desire, as the great Clever-grasse, Saint Foin, La Lucern, &c.

5. Deficiency is, That men do usually covet great quantities of land; yet cannot manage a little well. There were amongst the ancient Romans some appointed to see that men did till their lands as they should do, and if they did not, to punish them as enemies to the publick; perhaps such a law might not be amisse with us: for without question the publick sufferereth much, by private mens negligences; I therefore wish men to take Colonel's Council, which is, *Landa et ingentia Rura, Exiguum Colito, For melior est cultura exiguitas, &c.*, as another saith, or as we say in English, *A little Farm well tilled is to be preferred;* for then we should not see so much waste land, but more industry, greater crops, and more people employed, then are at this present, to the great profit of the Common wealth.

21 Deficit-  
ency, that  
because of  
our sins  
we have  
not the  
blessing of  
God upon  
our labours.

21. Deficiency is, That by reason of our sins we have not the blessing of the Lord upon our Labours.

And this the reason, that although the Husbandman hath been laborious and diligent in his calling these last years; yet our Crops have been thin, his Cattel swept away, and scarcity and famine hath feized on all parts of this Land; and if we had not been supplied from abroad, we had quite devoured all the Creatures of this Island for our sustenance, and yet we could not be satisfied, but must have devoured one another. And therefore to conclude, though I desire the Husbandman to be diligent and laborious in his calling, yet I counsel him to break off his sins by Repentance, to have his eyes towards him who is the Giver of every good thing, and to pray daily to him for his blessings, who giveth freely to them that ask, and upbraideth not. And although all callings ought to look up to him that is on high; yet the Country-man especially; for he hath a more immediate dependance on him then any other: for if the Lord withdraw his fat dew from Heaven, or the former

or

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or later Rain, it is in vain that the Husbandman rise up early, and go to bed late, and eat the bread of earofulnesse: for we know, that it is the Lord that maketh barren places fruitfull, and he likewise that turneth fruitfull Lands into barrennesse, ( as the Land of Canaan, which was very fruitfull even in the time of the Cananites, but now a barren desert) and therefore, I again desire the Country-man to walk as it becometh a Christian, in all Sobriety, Righteousnesse and Godlinesse: not to trust to his confidence in his own labours, and good Husbandry; but on the Lord that hath made all things: for though even Paul himself doth plant, and Apoio doth water; yet it is only the Lord that giveth increase and plenty, which he will not deny to those that fear him; for he shal want nothing that is good.

And thus Sir, I have written to you very largely my thoughts concerning the Husbandry of this Island, and partly what I have seen in many travells. Good Sir, be not offended at my long and impertinent stories, my rude language, and unmethodical discourse. It was, if not to satisfy, yet somewhat to gratifie the universal goodness of your spirit, and care of the publick, which God hath intrusted you withall. And these are only my first thoughts, which in haste I have huddled up together. I hope ( if the Lord send life and health ) my second thoughts shall be better: But whatsoever I have done, pray look on it, as comming from one who is desirous to serve you, and to aduaace the Publick good, according to the talent the Lord hath given him. Thus I commit you to the protection of the Almighty: And rest

SIR,

Your,

Anno; 1651.

Copies and Extracts of more letters written to Mr. Samuel Hartlib: They attending very much to the great improvement not only

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onely of Agriculture, but of true and real Learning, and Natural Philosophy.

SIR,  
The several things observed and set down during my stay in the Country, are these.

1. Learned the whole way and art, of making and ordering of Woad, viz. the time when they sow it, when first they weed it, and cut it. I saw the manner of their gathering it, grinding, balling, drying it, and after sweating, and curing it. Informing my self of the whole charge and profit of it; have made divers Annotations on it, and taken order for some feed to be sent to me, for other more compendious and profitable trials, answerable to the Nature and Philosophy of it,

2. This and some other things, gave me occasion to make the best inquiry I could of Housewives and of Fowlers, for all sorts of drying weeds, and herbs, used in the dying of wool or of nets, which I have carefully collected to improve to a more then ordinary use; some being very remarkable.

3. Among other generall inquiries and adventures, I heard of one at Ware, that charr'd Sea-coal; procured an errand and commendations thither; went, was civilly used, and satisfied in the truth and manner of the thing, and found the Gentleman who was the first Author of it to be one *Aire*, now dead an ingenious man, a great Malster, made much profit of it; it drying Malt as sweet as if the Sun it self did it; it cheaper then either wood or straw; and may be many otherways applied.

4. I went into the Isle of Ely, to see one of the Holland-mills for dreyning; though set up there and kept by certain Frenchmen. The Invention seemed to me but mean and rude, and Mr. Wheeler's way much more ingenious.

5. I saw at Wickford the manner of your Holland Sluice. The ruines also of a Castle, for the emptying and dreining of water, of which *Vbaldus* hath writt a whole Treatise. Likewise a pretty kind of Pinnace with Ordnance, somewhat like a close *Liter*, but flat-bottomed; which rowed with wheels instead of Oars, employed it seems formerly with admirable success, for the taking in

of Crewland, and which gave me a proof of what I for many years have thought possible, and of very great use and service, and still think it of unknown value, if it were skilfully indeed framed, and applyed as it might be.

6. The Lord F. W. assured me of a Gentleman in Norfolk, that made above 10000*l.* sted. of a piece of ground, not 40 yards square, and yet there was neither Mineral nor Metal in it. He after told me, it was only a lott of fine Clay, for the making a choise sort of earthen ware; which some that knew it seeing him dig up, discovered the value of it, and sending it into Holland, received so much money for it: it is a story not to be despiled.

7. His Lordship told me the way of making of Spunk or Touch wood.

8. Mr. H. his Lordship's Bailiff, shewed me a small plat of ground, scarce an Acre and half, wherein he assured me, he had in one year 27. hundred of Hops; and falling out there to be scarce in other places, he made of that small parcel of ground 4. score *l.*

9. At Milton I saw a Spring, that might have been made big enough to serve a large Town; which my friend Wheeler had newly discovered, and broke up; every man oppressing him in it, and deriding his confidence, till he made it appear, and shamed them. Hereupon he gave me several marks of knowing and finding out Springs under ground.

10. From Springs we converted our discourse to Pipes, for the carrying along of Water under ground to any House or Town; wherein he imparted some Secrets to me, both of the fittest Wood and Trees for Pipes, and preserving them whole Ages from corruption, by ways extreamly rational, and not hitherto observed or found out by any.

11. This drew on some discourse of woods, their differences and several applications: in which he told me many singular observations.

12. After this, I saw at Melton an excellent Model of a Garden, Orchard, and Walks; and being further curious, my friend related a witty invention he once put in practise, to plant an Orchard in a Morish place, where never grew a Tree.

13. I casually met with one Boughton, a most singular rare man, in carving or cutting out Figures in small or in great Stone;

and for that reason Servant in ordinary to the late King : who acquainted mee of many excellent ingenious men, and promised to seek me at my lodging.

14. Being in Cambridge-shire, I examined more particularly the Husbandry, planting, ordering, and curing of Saffron.

Some other things came in my way not without notice : but these are the chief. My own improvements and comments upon all which, I shall more at large give you, when we meet together being always.

SIR,

Yours

*Queres sent into France; about the feed called  
La Lucern.*

**V**hen one N. N. was last in France, (being in discourse with Doctour D. concerning Saint Foin, he was then told by Doctour D. that for the improvement of barren grounds) there was in those parts of France about Paris another feed that did far excel that of Saint Foin, and that the name of that more excellent feed was La Lucern. I am desired by a friend of mine to whom N. N. related this paflage of Doctour D.) that by your kindnesse, he may be spoken to of this La Lucern, and his directions desired, where the said feed is to be had? for what price? how much is usually sowed upon an English Acre? what time of the year its sowne? whether it be sowne alone? or with any other ordinary Corn? and with what Corn? and with what kind of land it best agrees? and finally, what other particulars he can direct more then is here set downe.

The

*The Answer to the Queres  
from Paris.*

I Have been with Doctour D. about Lucern, who tells me that it groweth best in wetish grounds, that the best time of sowing it in England will be in February, at the same time that Oats are sown with the which also it may be sown, but best alone; that to the sowing of an Arpent, (which is much what the same with an English Acre) there will go 12 or 15 l of the seed, the which useth to be sold here at 8 or 9 sols the pound;

*More Queres concerning Lucern.*

I Desire further to know, what kind of wet grounds are best for it? whether Moorish or Clay? whether poor or rich? whether it will continue over a year in the ground? and if more then a year, then how many years it will continue without being new sown? whether it be only good for Meadowes or for Pasture? and if for pasture then whether the sheep or Cattel be suffered to go upon it? or whether it be carried off green as the Clover-grasse is in Flanders?

Lastly, for what Cattel it is most proper?

*Another Answer from Paris.*

I Thought to have sent you 9 l. of the seed of Lucern for the sowing of thire Acres, Doctour D. having told me, as heretofore I told you, that 3 l. would sowe an Arpent or Acre; But as I was going about it, I met with a Gentleman an acquaintance of mine, who some years since (but unknown to me hitherto) hath had some Acres of Meadow of Lccern upon his ground, to whom having casually spoke of my businesse, and told him all that Doctor D. had told me about the Lucern; he answered me, that Dr. D. was most grossly mistaken in the quantity of the seed required for the sowing of an Acre, and that it woud not take up 3 l. but two whole Sacks, each sack containing the full load of a strong Porter; after which rate the quantity of seed for the sowing of 3- Acres.

Acres would fill a great dry-far, the sending whereof by Land would come to excessive great charges, and therefore necessarily to be sent by Sea in my opinion. You will be pleased to impart these things to your friend, and to let me know his final resolution upon them, the which shall be faithfully accomplished by me; and in the mean while, I will get him a perfect and full answer upon all his Quere's, not from Dr. D. ( whom I dare trust no more in this busines, having found him guilty of such grosse mistakes about it) but from that other Gentleman, who told me he could himself resolve most of thele Questions; but that for to be the surer, he thought it best to confer first with his Farmer about it. You make Apologies for putting me upon these Inquiries; but I pray you to believe, that at any time I shall most readily and cheerfully perform any service that shall lie in my power, for you or any of your friends, for your sake. And I were very unreasonale, to think troublesome any thing that you require of me, when as continually I put you to so much trouble my self.

#### *The last Answer concerning Lucern.*

**T**He information about the Lueern that I have got from my Friend, being a very particular one, and containing a very full answer to all the Questions propounded by your Friend; is such as followeth: It requireth a rich ground, but somewhat loose and light, so as a stiffe Clay, and such other tough grounds, are nowayes fit for it; The ground must not be over-dry nor over-moist, but in a mean; yet somewhat more inclining to moisture, then to the contrary. It must be ploughed three times, the first time in *Ottober*, and the second and third, towards the Spring. Naturally it doth not love Dung, and cometh much better in a ground that is sufficiently rich of it self, then that which hath been enriched by dunging; and where Dung is made use of, it must be very stale and well rotten, and long before the sowing time. It cannot endure the cold, and therefore must not be sown till the cold weather and all the danger of it be quite past, *viz.* about the beginning or midst of *April*. The Quantity of the seed, is the sixth part of Corn, that the same ground would require: so as only one Bushel of Lueern is to be sown on that space of ground, which would re-

quire 6. Bushels of Corn. It must be carefully weeded, especially in the beginning. And to the end, that it may take the more firm root, some *Oats* must be mixed with it, but in a very small proportion. It is to be cut as soon as it beginneth to flower, which in the hot Countries (*Provence, Languedock and Spain*) it doth 5, or 6. times, and former years 7, or 8. times in a Summer; but in this Climate it useth to be cut twice a year, about the end of *June*, and about the end of *Septemb*. Being cut, it must be turned very oft, that it may dry the sooner, and be carried off the ground the soonest that may be; and it must be kept in close Barns, being too tender for to be kept in Reks, open to the Aire as other Hay. It is good for all kind of Cattel, as Kine, Sheep, Goats, and as well for the young ones (Calves, Lambs, Kids) as for the others; but above all it agreeth best with Horses. It is much more feeding then any other Hay: insomuch, as any lean beasts will soon grow fat with it; and to the Milch-beasts, it procureth abundance of milk: but it must never be given alone, especially to beasts that have not been long used to it: but must ever be mixed with straw, or with some other Hay; for otherwise it over-heareth them, and filleth them too much with blood: and that so suddenly, as it greatly endangereth their health, and their life too; which it doth principally to Kine; to whom it is more dangerous, if too plentifully given, then to any other Cattel. After the last cutting, you may let your Cattel graze on your Lucern-fields, and that all Winter long, until the beginning or middle of *March*. Of once sowing you will have your Meadow continue good for 10. or 12. years, and until 15. and afterwards too, it will still continue to bear; but the Hearb will then notably decay in goodness. Wherefore it is best to turn it then to some other use. Kine must never eat of this Hearb green; but only dried, and that moderately too, as hath been said. But Horses eating their fill of it green in the Spring, are purged thereby, and grow fat by it in 8. or 10. dayes time: If one desire to have of the Grain, one may let such a proportion of the Meadow as one will, grow up to seed, after the second cutting, any year except the first only: and when the seed is ripe, the tops of the Hearb, with the Codds wherein the seed is incloled, must be cut in a dewie morning, and put into sheets, for fear of lossing the seed, and must be beat out with Flails upon the same, when that it is well

well dried : and afterwards the remaining part of the Herb must be mowen close to the ground ; after which it continueth to sprout out again after the usual manner. The Hay thereof wil keep good 2. or 3. years ; and one Acre is sufficient to keep 3. Horses all the year long.

*A Post-script to the last Answer concerning the Lucern.*

S I R,

The Gentleman, who had given me the note about the Lucern, hath told me since two particulars more, which he had forgot to put into it : The one, that not only to other Cattel, but even to Horses with whom that Hay agreeeth best of all other beasts; it is not to be given but in winter ; because that in the Summer it would too much heat their bloud : And the other, that this hay must be perfectly well dried, before it be carried off the ground ; and to that end turned very often: because that being put up with any the least moisture, it will quite spoil, much more then any other Hay. Now these and all the oþer particulars, which I have had from the Gentleman, have been confirmed to me by many others. And yet within these 2. or 3. dayes I met with a Phyſition of *Rochel*, who affirme me that the Lucern was very common in his Countrey, made me a relation of it agreeing with the former, only in these 3. points, viz. That of once sowing it will continue 10. or 12. years ; That it is cut twice a year, serving afterwards for Pasture all Winter ; And that it wonderfully fatteneth all kind of Cattel ; but very much different from it in all the others, and in some of them point blank contrary to it. For he faith, that it is to be sown in the beginnian of *March* ; that it defiresh a temperate ground, but rather dry then wet, and no wayes fat nor clayish, but stony and gravelly ; that it need not be mixed with any other Hay, but may be given alone, and all the year long ; in Summer as well as Winter, not only to Horses, but to Cows and other Cattel. He added, that the proportion of the feed, is the charge of a Porter for four Arpents or French Acres. Which particulars I thought good to impart unto you, that your friend comparing them with the others,

others might make his best profit of them ; and this *Rochellois* ; (or *Rocheller*) who hath lyed three or four years in *England*, thinks that Lucern will come admirably well in that Country.

N O T E.

The meaning of these words --- *The quantity of the Seed is the sixth part of Corn that the same ground would require* --- is this, That whatever quantity of Wheat or Barley an Acre of ground would require of the seed of Lucern, you must take but the sixth part of that quantity of the seed of Lucern, so as that ground which for its sowing requireth six bushels of *Corn*, doth require but one bushel of Lucern-seed.

An *Arpent de terre* (which how much it is in English measure *Cotgrave's Dictionary* will perfectly tell you) requireth 10.  $\frac{1}{6}$  of that seed, as several Grain-sellers (of whom I went to inquire for it) have unanimously told me : the seed being exceeding small, and to be sownen wonderfully thin. As for *Saint Poin* or *Holy Hay*, I have seen it grow here about *Paris* in several places, in rich fat grounds, and those both high and dry, and others low and Marshy. It is cut but once a year, much whar about the same time of other Hay, and a great deal of the seed of it is required for sowing the ground with it. But being once sownen, it lasteth 10 or 12 years, as well as *Medicor* or *Lucern*, wherewith also it correspondeth altogether in its Vertues and Ules.

*A Copy of a Letter, relating a Proof or Experiment of an English Husbandry.*

Honoured Sir.

I Desire your acceptance of this small present, may be according to the real worth of the thing ; not as at first sight it may appear to be (viz.) straw or stubble. This is I assure you no other then the true and real Experiment of what by the blessing of God, the native fertility of our English ground, rightly Husbanded will bring forth ; nay I can upon most probable grounds affirm, that had I used all the Art and Care which I could and might have done

done, (had I not been otherwise taken off) it could hardly have failed to have been double, treble, or quadruple to what it is. And it is also most true, that any good ground well managed, may yeild one, ten, a hundred, &c. Acres, in which there shall be very many superior to the biggest root of these, and hardly one inferior to the best but one; by which account it will easily appear, how much beyond the old way, this is the increase, there being between two and five quarters on the Acre; and the product of this way will be rarely under 10 quarters, not rarely 16 or 20 and the same for most grains; yet will this dull age as to goodness, not believe it without some testimony, and perhaps scarce suffer themselves to be convinc'd by this so eminent an experiment; wherein it plainly appears, *That out of one single Barley-Corn is sprung about 80 Ears, of which near 60 had, some 36, 34, 32, 30, and hardly any less than 38, which in all is above 2000 for one:* And truly the charges to be bestowed on an acte of this sort, is no ways double to the common way. Accept it therefore, and reserve it as a real rarity, and a jewel onely fit for a Publick and Pious spirit, as yours is: till I shall by Gods assistance be able next year to produce you more abundant examples of Gods wonderfull power and bounty that offers, and mans ingratitude that neglects, or refuses such honest means, of the truest and most justly gotten humane wealth, honour and happiness.

*Your most faithful and obliged friend and servant.*

September 26. 1650.

*An Extract of a Letter from Amsterdam dated the 28 of November, 1650, in answer to the former communication, with another experiment of a French Husbandry.*

Sir

SIR,

I Am much obliged unto you for sending me the *Discourse of the Brabant Husbandry*, which I have perused. Not long ago I was told of certain men which would fain have morgaged some thousand Acres of Heathy grounds, which lay here and there as Commons. But the late Prince of Orange by the advice of his Councel, durst not entertain any such Propositions, the lands belonging to the Commonalty. On the other hand the undertakers would not be contented with lesse for imparting of their Secret. It appears unto me by all circumstances, that it was the same design of *Husbandry* with yours, the parties if I remember well being Englishmen. From *Paris* I am adveritzed (for certain) of one, who did last year, 1649, ferment one grain of Wheat, which this year hath produced him 14 Ears, and within them 6000 Grains, which is more then 80 Ears, and 600 Grains of your English friends. This year, 1650, he hath a great many fermented and sown.

*An Answer to the foregoing extract of a Letter from Amsterdam.*

SIR,

I Have received from you a Relation of a very great and wonderful production or iacreate, which your Friend at *Amsterdam* relates to be done in *France*. I am far from lessening the admirable greatness of that person's skill and success. Only since I find my self taken notice of by the same party, and the experiment I made the last year of Barly, weighed in the scales with this, and found too light; I shall take leave to say, that (besides all difference that is or may be conceived to be betwixt the foyles; that of *France* hath a manifest advantage in the elevation and powerful operation of the Sun.) That it is probable he did use all possible means both to the ground and seed, to make them both fruitful, which I did not at all; but quite contrarily I chose the worst seed I could procure, and my ground was as barren as any whatsoever in the parts adjacent. I added nothing to either; all I did was

N<sup>o</sup> 2

after

after the blade was sprung up. And whereas your friend mentio[n]s 600. out of 80. eares, those eares contained one with the other at the least 30 single Corns, which is 2400. That besides that, *wheat* is no whit inferior to *Barly*, but rather more inclined to its proper nature to branch and spread : it is also allowed as long time again to grow, and therefore may better spread to many eares then *Barly*. That my ears of *Barly* rated at 20. one with the other, (which they were at least, some having 28. a thing I suppose rarely (if ever) seen in *England* before) are full as high as his *wheat* ears rated at 52. And the seeming great difference between, 2400 and 600, when looked into, will prove not to be in the number of eares, which differ no more then as 14. to 10. but in the nature of the Grains, there being universally as many more in an eare of wheat as in an eare of *Barly*. That if (as it is most like) he in *France* did only try conclusions, to what height nature might possibly be scrued by art, and that what is here related, was the effect of that trial ; that holds not comparison with mine, which is generally practicable, without any considerable expence of time or stock more then in the common-way. Lastly I affirm, in all possible humble reverence and submission to Gods good pleasure, power and providence ; that when I shall make use of good feed rightly prepared, good Land in right condition, and all other helps which I know and can use ; I shall not doubt for smaller numbers of the same grain (*viz.*) *Wheat*, to produce 200. or 300. eares, and in them 10000. 12000. or 15000. Corns, (and somewhat like that, for whole fields together), and that here in *England*, howsoever let us alwayes remember to give all possible praise to God, whose blessing only makes rich.

SIR,

I am your faithful  
Friend and Servant

Another

*Another Letter from Paris, discovering the secret of the fore-named French Husbandry.*

SIR,

Do with much impatience desire the Treatise or Discourse published by you about the *Brabant Husbandry*, and do very much admire the industry of that *English Gentleman* your friend, who hath found out the wayes of making Corn multiply so prodigiously. The *Parisian Experiments* of Corn multiplication I know not : but a friend of mine very well acquainted with him, astreuth me to have had the following description of his secret from himself ; and to have seen the experience of it very fully in the year 1649. not in any great quantity, but in a Garden, only for trials sake.

Pour into quick or unslackt Lime, as much water as sufficeth to make it swim four inches above the water : And unto 10 l. of the said water pow red off, mix one pound of *Aqua-vite*, and in that liquor steep or soak Wheat (or Corn) 24. hour : which being dried in the Sun, or in the Aire, steep again in the said liquor 24. hours more, and do it likewise the third time : Afterward sow them at great distances the one from the other, about the distance of a foot between each grain. So one grain will produce 30. 36. 38. 42. 52. eares, and those very fruitful, with a tall stalk, equaling the statute of a man in height.

*Another Extract of a Letter from the Low-Countries.*

SIR,

These are to give you special thanks for communication of the *Parisian Experiments* Secret. Water (if he means cold water) poured into quick or unslackt Lime, cannot work much in one hour upon the Lime ; but if it be boiled with it, and that the water be poured alwayes fresh upon the Lime, then it will come to be strong at last, that an Egg may swim in it, as I learn'd by tradition

tradition from Dr. Hartmannus, but could never make any try al of it, for want of unslagkt Lime in the place where I live. This perhaps may be yet better; but experience goes beyond reason in these cases. The often macerating or steeping, and drying of grain I like very well. I have only according to Mr. Gabr. Plats's directions steeped them 24 hours in turned or tainted Rain-water, and Cow-dung, and afterwards sown them thus wet; which on Sandy grounds hath produced such goodly Corn, as if it had been very good Land. Some here use Salt-Peter, which also doth much good; but is found likewise in Sheeps-Dung, as may appear by its fertility. I have lost the Book of Husbandry of Mr. Plats, which was called, *A Discovery of infinite Treasure hidden since the Worlds beginning*; Whereunto all men of what degree soever, are friendly invited to be sharers with the Discoverer. For having lent the same to a friend, that it might be translated into *High-Dutch*, I could never see it again. I am told it is out of print. But if you could help me to another, you would do me a pleasure. I have nothing to add for the present, but that the Genius of this Age is very much bent to advance Husbandry; and that in all Countries I hear there are found Gentlemen, that study professedly these improvements more then in former times. I rest always

SIR,

Yours,

Sir

*Another Letter expressing the reasons why the Experimenter of the Barley-Corn, thinks it is not fit or expedient to part with his secret at yet for a more common use.*

SIR,

I find dayly more and more, that it is too true, that most men love money, that they even worship it in their hearts, as the only *Sanum Bonum*. I need not go far for proof, since they have brought one to my hand. That ( having so fair and just offers made, in order to the Corn-business; as I have presented to them by your hands,) will by no means ( though so very much to their own profit and the Publick Good ) part with their monies; and yet stick not to demand (in effect) the discovery from me of that talent or knowledge, which God hath made mine by his free gift; as the reward of my industry, and faithfull love to my native Country; An estate (if I mistake not) better gotten then by any of the common means; by which men grow rich dayly. Surely the commodities cannot be lesse then equal. The most wise and vertuous men that ever lived, have preferred Art, Industry, and Ingenuity far before money. Money (especially the abuse of it) is become the very poison of the world, against which Art and Industry is an Antidote or Cordial. Money is counted and enjoyed by a thousand thousands, Art and Industry but by a few. And things of excellent use are accounted Jewels, especially when rare and scarce. The Professors of Art and Industry, besides their private aim also at a Publick good: these prefer their private gain (too often) before the being and well being of the whole world; nay of their own souls. These are ever ready to part with invaluable treasures upon easie conditions: Those will not upon any conditions whatsoever (but such as please themselves or are full of oppression) part with their monies, (ne nor to save a Brothers, or hardly a Fathers, or a Childs life.) And finally if they judge it improvidence to part with a little of their estates, only for a time, to return again to them shortly, like Noahs Dove with an Olive branch, a double branch of Peace and Prosperity: I desire to be excused, if I upon better grounds hold it prophane, to sell a better right then a birth-right for lesse then a mesle of portage; evn for just nothing, and for ever. I can never forget the exceeding great ingenuity to the world, shewed and given by Mr. Gab. Plats, as will more fully appear, when you shall have printed those writings of his which he left to your

your trust and custody, and the worlds base ingratitude that let such a man fall down dead in the street for want of food, without a shire to hib back; now (but your self that want not an enlarged heart but a fuller hand to supply the worlds defects) being found with some few others, to administer any relief to a man of so great merit. In a word, that God that hath forbid to muzzle the Ox that treads out the fodder, hath appointed every man to use his blessings (next to his glory for the providing for and preservation of his family, which he that can do and doth not, is worse than an Infidel). I dare not give away this means of obtaining outward blessings to my self & family, till I have found away to make it instrumental to that end; and that end once effectually attained to, I dare not deny Gods mercy and bounty to me, nor longer restrain the Publick use of this universall good: I remain

SIR,

Yours,

*A Secret practised with very good success in England, concerning sowing of Wheat, to prevent it from being Smutty.*

**F**irst take your Wheat, pour the same into a tub of water, and stir it about, take off all the Corn that swimmeth upon the water, and pour the rest upon a floor, letting the water run off. Then make a strong brine of Baysalt, and pour some of the brine on the Corn upon the floor; and take to half a quarter of Corn, half a peck of Salt, and strow it on the Corn, and stir and mix it continually, as you pour thereon the brine, and strow the salt thereon, untill the Corn be all wet and overstrowed with Salt.

Then take to a half quarter of Corn, half a bushel of unstack'd lime, and strow that likewise over the Corn, mingling it well together; which done you may sow the same the next day. The brine must be cold when you pour it on the Corn, and you must prepare no more Wheat, then you intend to sow next day.

Another

*Another Secret practised in Germany for the enriching of Meadowes;*  
**A** Meadow yields 6 times more Hay, when it is turned up with a plough, and sovven thick with ashes burn't out of the substance thereof, but the rain must fall first. Afterwards sovve your Meadow with the seed of Trefile, and plough and harrov them in. The first grasse whiche groweth thereon, let it be very ripe, that the seed may fall off it selfe; then let some go over it, and with rakes stir it, that it fall out. Afterwards let it be moven off, and carried to a certain place where it may be dried, so the Grasse will grow presently againe, and may be moven again in three wweeks.

*How to make Rusby ground to bear Grass.*

**B**Reake the Rusby ground, and take the roots and the rushes together, and burne them or carry them avway. Then spread upon that ground, Turffe-ashes, or Pigeons-dung, Chalke or Lime, according to your ground. Try of every one of these upon a little plot of your ground: you may use other Ashes, Marle or Dung for experiments: and that which you finde doth kill the Rubes and other Weeds best, use it: you are to make gutters or draines to carry avway the watter from the ground: you may destroy Rusbes or Ferne, if you will; but cut or movve them dovn in the beginning of June, and so use to do it 2 or 3 years together at that time.

*For planting or sowing Walnuts.*

**I**N the season wher they are full ripe on the trees, a fevv dayes before they vwould fall, as near as can be guessed, let them be gathered or beaten off; and in the green huske, or without it, put them into good ordinary earth in a barrel or basket: So let them continue until the beginning of March following: as soon as that moneth begins, get as much vvarme Milke from the Cowes as will steepem 24 hours: after they are steeped, set them in ground well digged, and judged naturall for such fruit, whic their little end, or their prickled sharpe end upvvards about 3 or 4 inches deepe in the earth, and not one of 28 will fail, as hath appeared by experiance. This may make dry Walnuts also prove trees, the Nuts used as above said, as faire as may be, set them near one foot a-funder, and in a right line to veed them. The Walnut breeds good Timber, good Shadow, good smell, good fruit. At four years growth transplant them.

O

Mr.

*Mr. Lanyon's Description of the uſual manner of planting and tranſplanting (according to that of Flaunders) of thofe Trees called A-beales, imparted for Publicke Good.*

They are firſt planted from any even the leaſt part of the Root of the ſame Tree: you muſt diuid the root, by ſlipping each part from the other, and not by cutting it in ſunder: you may take thofe parts from thofe trees whilſt they grow, and without danger to them, rob them of all the ſmall prigs of the root, and leave only the *Master-Roots*; but the moſt uſual way is to multiply them, when they are tranſplanted; which time is at their growth of 5 years: their ſeafon is in *March*. They are firſt planted in the way of a *Nurſery*, in loose earth, moist and sandy, or inclining to it: their diſtance is 10 inches one from another (the earth being firſt prepared as for a *Garden*:) you are to make holes with a ſtick, the depth of the length of the part you have to ſet, ſetting him ſo that you may onely ſee a part of it above ground, the earth being cloſed about them; they are to be kept weeded as any other plants: The ſecond year in *February* you are to prune off all from the *Master* or *Middle-broote*, and ſo to the 3 and 4 year: the 5 you may tranſplant them, ſo as they like the ground of their *Nurſery*. Their uſual diſtance one from another is 1 foot: you may drive a ſtafe with them when you tranſplant them, to ſecure them ſtiffe againſt the wind; for that they will grow very tall in thofe years, and ſo be much expoſed to the winds. They may without much prejudice (to Corne) be planted in the furrowes where it growes; ſo as the ground be moist, and you keep them well pruned, and leave onely a buſh at the top of the tree. No ſtiffe *Clay* grounds will admit them to thrive, they wil grow in moist *Clay* ground, but onely in height, and will not burnish for want of roome to extend their roots. This tree if he likes his ground; will be at ful growth in 20 years. He is valued in *Flaunders* after 7 years growth, worth every year 12 d. until his time be up. He growes very ſtraight without boughes, onely a buſh on the top, and ſo exceedingly well becomes a *Walke*. This *Timber* is uncomparable for all foris of wooden vefſels, elſpecially *Traies*; *Butchers-traies* canouſt yelbe made vwithout it, it being fo exceeding light and tough. Some years ago there were ten thouſand at once ſent over into *England*, and tranſplanted into many *Countieſ*. *M. Walker* at *S. James* can give the beſt account of them to all ſuch as deſire further to be direc‐ted in this particular.

*F I N I S.*

A N  
**APPENDIX**  
T O T H E  
**LE GACIE**  
O F  
**HUSBANDRY:**  
O R,  
A Seed-plot of *Annotations* upon the  
LE GACIE aforesaid.  
W I T H  
**AN INTERROGATORIE,**  
Relating more particularly to the  
Husbandry, and Naturall History of  
**I R E L A N D.**



 Printed for *Richard Wodenotbe*,  
*M DC LII.*

To his worthy and very much Honoured  
Friend, the Author of the large Letter of Husbandry.

SIR,

You may perceive by these Additionals to your large Letter, which you vwrite to gratifie my desires, that the Publicke hath been benefited by your Communications, vwhich was all that I intended; by setting you upon that worke: nor will you repent of the paines I hope which you have taken this way. For you see that your Open-hartedness in this kind hath provoked another Friend of mine of very publicke desert in the Common-wealth of Learning, to impart unto me his Observations of the same nature. And although his Annotations now and then, are Animadversions rather then Enlargements, yet it is not unprofitable to the Publicke, nor disadvantageous to us; that our errours and mistakes (for who can pretend to be without them;) be laid open and rectified. I suppose you would be as loath as I, that any by your means or mine, should be led into a by-way, and instead of gaining become a lofer, in making triall of what we offer for his advantage. I could wish that my worthy Friend who hath imparted these his thoughts unto me in the following extemporey Letters, had spared some expressions, & bin less censorious against the Persons of some, of whom others have a high and honorable opinion, as *Helmont* & *Glauber*; but he is to be borne with all in this, as we would be borne with all by him and others; in the freedome which we might take of giving our opinions concerning his failings. Also I am confident, that that learned Gentleman is not interested by any prejudice of passion, or personall disaffection against any of them; but that as a man of a free spirit he doth give his judgement through his zeal and love to every truth as it lies in his apprehension; let every one have his freedome in things which are well meant for the Publicke; and the best way to rectifie one anothers mistakes, will be to strive to set each other a Copy, of better and more moderate expressions in the like Cases, wherein there may be a mistake or failing: If we wereskilfull to provoke one another, onely to the affections of love and of good works; and by our

our own usefull experiments discreetly dispensed towards the Publique, could draw forth the profitable (but buried) skill of others, unto common use to be imparted unto all ; what could not be done for ease of the poor, and the relief of common calamities ? Truly, although neither God by his directions how to make use of all his gifts ; nor Nature his handmaid by her supplies of things necessary and comfortable for our livelihood are wanting to us. Yet we by the untowardnesse of our spirits, and the stutting up of our bowels, and the enviousnesse of our dispositions, bring a scarcity upon our selves, and upon others, whil'st we are not faithfull and liberall stewards of our talents, for the benefit of those, for whose sake God hath bestowed them upon us : therefore I shall desire you, as you have begun, to continue in well doing, for you know the promise, *that in due time you shall reap the fruit of all your labours, if you faint not.* And least you should imagine, that you are at this distance forgotten by us, give me leave to present you with another taske proper for your thoughts in the place where now you are, that the advantages of Nature, which God hath bestowed upon *Ireland*, may not lie undiscovered, and without improvement, at this seafon vvhenein the Replanting of the vast and desolate places of that Countrey, is seriously laid to heart by many : I shall therefore desire you to look upon this Alphabet of interrogatories, and consider vwhat Answers your Observations vwill afford unto them ; or vwhat you can learne from the Observations of others to clear them ; and as you have opportunity, do, as my Friend from *Paris* hath done ; furnish me vvith vwhat Gods providence shall send unto your hands, that as I have begun, I may put it out to use : and requite you more plentifully, as I hope I shall be able to do, vvith the increase, vwhich it shall yield, by the way of Trading, vwhich I have taken up freely to bestow my paines and cost upon others, that all may see the goodness of God in the wworks of his hands, and have cause to be thankfull unto him for the same, and that so many eminent talents vvhich God hath put into your hands, may not (seeing he hath given you a heart to use them) lyce idle for want of Objects, and fit Commodities vvhervewthall to be trading vvith him, vwho subscribes himself alvways, *SIR,*

*I am very much obliged and assured friend to serve you,*

Samuel Hartib.



## Annotations upon the Legacie of HVS BANDRY.

*Paris, the 1 of July 1651.*

**H** Give you most hearty thankes for your worke of *Husbandry*, the vvhich having perused instantely *a capite ad calcem*. I finde it a most excellent piece both for the improvement of Husbandry, and of the other Commodities of the Countrey, as likevise for the Natural History of *England*, and have learned many particulars by it, vvhich before vvere unknowne to me. But I remember to have heard of a Dutch Merchant in *Dublin*, that the Dutch used to fetch their Black-lead out of *Wales* ; vwhereas you say it is found in *Cumberland*, and no vwhere else in *Christendome*. I pray you to let me understand, vwhether you have any particular knowlidge of that Mine, of the nature and properties of that materiall, vwhether it serveth for any other uses, than to make pens off, and to neale earthen vessel vvhichall, and hovv for this use Potters do prepare and apply it.

*Paris the 11 of July 1651.*

**J** Was hugely taken vvith the large Epistle in your Legacie upon the first reading of it, and am more novv upon the second, vvhich maketh me sorry, that the Author shoulde give any advantage to carpings wits ; as he doth here and there in some of

the *Parerga*; upon which I shall freely give you my sense, that being communicated to him, he may mend them in the next Edition, if so he see it fitting: What he saith out of *Helmont*, page 13. *The smuttye corne, and the foole disease to have begun in France, together about 1530.* and the letter to have had *sime* originnall from the former. To say nothing of the small credit of that Author, even in things subject to his own knowledge and experience (as being adduced to evince him of more passable lies out of his own writings) a more credible Author than he should not be alleged, much less headed; if opposite to so notorious a truth; as that of the foole disease, it's originnall in *France*, as well as in *Italia* and *Spain*; full 36 years sooner than *Helmont* saies (viz.) in the year 1494: and nothing could be advanced more absurd or ridiculous in the judgement of all sound Physicians, than to attribute the originnall of that disease in any wise to smutty corne, as he doth. The imperfection of smutty corne, consisteth altogether in a simillar distemper, and that of the more spirituous part, consequently not at all subject to the eyes, and so not to be found out by the Microscope, to the contrary of what our Author supposeth, page 15. *The corne corne in July, produced such an increase,* page 18. I cannot imagine, how Corne sowne in Summer can come to good, or what humana wit or skill can binder it from running up; and spending it selfe, before the coming in of winter. His Philosophy of the blacknesse of the *Aqua-vite*, as communicated by the blacknesse of the earth or turfe, page 25, is no wayes receivable. I finde him too credulous, page 27, to *Glauber* and others, about those Mountebanke boastings of brewing *risbast malt*; and of drawing great store of *Aqua-vite* out of the imaginary Beer; and other unift materials. The opinion of the Suns descending tenor, page 30, although justly (as I hold it rejected by *Martinus*, *Longo-montanus*, *Keplerus*, *Morinus*, *Bullialdus*, *quibus omnibus praei Ptolomeus*, ought not to be spoke of so contemptuously, seeing that one of the greatest Astronomers that ever was, (viz.) *Copernicus*, did first advance it, and *Reinholdus*; another most famous Artist approve of it, and he having made the lowest defent of the Sun but of 35 minutes, which is but a little more than

than halfe a degree; I know not what makes our Author speake of the Suns descending many degrees lower. It is true, that those 35 minutes amount to many thousands of miles, which expression therefore would be both more pertinent, and more suitable to the vulgar capacity of most Readers, than that of minutes or degrees; This is what I have obserued till page 30: further than which I am not yet come: And forasmuch as I have never an English Dictionary here, I would be glad of the exposition of some English words not so well understood by me, as howing (so oft spoke off) and the how; Wheats-lodging, page 18; Canker-berrys, page 27, and the difference betwixt hawes and hips; page *eadem*, I having ever taken them to signifie the same thing. I do not know neither, what are the piles on Marshes sides, page 25, and am ignorant of the History of *Glasenburys-Hauthorne* mentioned page 4, about which I would willingly receive some light.

*Paris the 19<sup>th</sup> of August 1651.*

A N English Gentleman, who many yeares hath lived and been a House-keeper in *Devon-shire*, as he was yesterday reading your Legacie at my house, having lighted on that passage, page 26, about the making of Cyder, told me, that the second way there mentioned is not a making of Cyder, but a certain preparation of it already made, usuall also in wines and other liquors, especially those that are to be transferred a great way by Sea; and as for the first, that he never saw it practised in *Devon-shire*, vwhere Cyder is very common; and vhere himselfe usually made 40 hogsheads every yeare; but that the vway of making Cyder in that Countrey used by all men is this; Having reduced their Apples into Mash, by turning upon them a kind of a millstone set edge-vvaiies in a vwooden trough, they presently carry them to a vwooden preffe of that bignesse: as in one hour they vvill preffe out tvvo hogsheads of Juice: the vwhich having let stand a day or tvvo, and taken off the black scum that ariseth in that time, they tunne it, and in

the barrels it containeth to worke some dayes longer, just as Beer useth to do. He told me divers other particulars about Cyder; partly of his own, and partly of that Countrys common observations, the which I forbearre to relate, because I believe that *Markham* hath spoke of them.

I knowe also hee had written to me concerning the same, but I have lost his letter.

*London*, 1<sup>st</sup> Febr. 1651.

*Paris* the 5. of September, 1651.

Seeing by your last, you desire the continuation of my Annotations uppon your Legacie, I must tell you that I believe your friend hath not been well informed, page 23, about the Countreys there named by him; for the sending of *Walnuts*, *Quinces*, and *Chestnuts* into England, and that it will be found upon better enquiry, that these commodities do come into England, if not soley yet abundantly: the first from Holland, the second from Zealand, and the third from France; and as for small nuts, except he speake of some exquisite kind of them, I know not why one should runne so farre as Spaine for them seeing that Ireland aboundeth in them above all Countreys in the world; page 27. *I know an ingenious man, who can without malting, &c.* If you and your friend will be ruled by me, you shall not take this upon *Glaubers* bare word, nor any of those other magnificent promises; which he maketh in that boasting Catalogue, till he have made them good by the effect, least the similitude of the Prophet *Esay* 29.8. be verified in us, page 28. *Grafting, Inoculating, &c.* a Gentleman will learn in two hours, to learne it to some purpose will require more than so many dayes, if not weeks *expertus loquor*: page 30. we finde Vines flourishing many hundred miles more towards the North [than Alsace] both in France, Lorraine and Germany: If for many hundreds he had said one hundred miles, he might perhaps have made that good, and yet not that neither in all the three Countreys here named, I am sure not near it in in Lorraine, and very hardly in France: page 31. *Vines grow 60 miles on this side Paris at Beaumont; Beaumont is but 8 leagues, or 16 English miles North from Paris and Beauvais (which and Beaumont is the most northern part of France, where*

any

any Vines grow) is but twice as farre, being distant 16 leagues from Paris. *Ibid. These places which are even as far North as England, nothing near none of them; page 36. lined 3<sup>o</sup> pack in so many plants, &c.* I have seen most of the Vineyards about Paris for many miles round, and never saw any such thing, very few having any thing in them but Vines, and where any thing else was, I saw onely a few Peach-trees here and there, too farre asunder to do any great harme to the Vines or ground; 37. *To short poles, as we do hops, out of one Hop-pole you may make 3 Vine-poles.* as for length; wwherefore they should not be so yoked together: *ibid. In France, so soon as they have pressed out their liquor with their feet* [pressing vvith feet is not used in all parts of France, and utterly unknown in these northern parts of it,] *they put it into hogheads not at all till it have vvorught first in Keeves: 39. from these who would destroy, &c.* I could wish that bitter and exasperating expression in the behalfe of my Countrymen might be spared. "If I vwould make Observations upon those passages, vvhich have somthing of good & excellent in them, as vvel as upon them vwhere I conceive somthing is to be mended, I should never have done, the Book being ful of the from one end to another; yet I cannot let passe vvith silence those words pag.44. *The sun and Deas ingender a nitrous fume*, they pointing at the unfolding of one of the greatest Mysteries in Nature, unknown to most of them if not to all; who professedly do deale in the inquiries of that noble science, but to speake of this to the full were not the work of a Scholion, but of a whole Treatise, concerning the Improvement of Land by Seafand; of which page 45 you wil finde a confirmation of that in *Irlands Natural History*, and it is very much used in *Devonshire*, with admirable successe, not onely equall to, but even beyond Limeit selfe, as I have been told, by that Gentleman, whose Observations concerning Cyder I gave you formerly; page 46. *All fertility proceedeth from salt, addendum.* Made unctuous, or oily, and spirituous, idest uno verbo nitrous, *nam sale mero asil magis inirizicum facundat;*

tati; 47. In Holland they as carefully preserve the Cowes ure, as their Dung to enrich their land, they preserve it no otherwise than is done in all other Countreys; viz. mixed with the Dung and joynlyt with it carried out to the Dung-hill, *ibid.* we must have it, [paper] from Italie, France, and Holland; I believe Italie sendeth out little paper, either to England, or to any other Countrey, and as for Holland; it hath none to send, but what it selfe getteth from abroad, there being none at all made there, (*viz.*) In Holland properly so called, nor in any of the other Provinces that I know of, but onely some in the *Velaw*, a part of *Gelderland*, and in *England* there is good store made, both towards *Oxford*, and in some other places, though not enough for to serve the Nation.

Paris<sup>18</sup> October, 1651.

Having continued to read on in your Legacie from page 48. where I left with my last Annotations, I finde nothing that needeth any Animadversions but these few following things, page 60, a kind of *Salix* called by them *Abel-tree*, the Tree called a *Abell* in Dutch is no wayes a kind of *Salix* but is *Populus alba*; *Ibid.* If we believe their own Authors, &c. I know not who those Authors are, but I am sure that whooever hath said so, hath said most untrue; for the profit that ariseth to *France* by *Silke*, cannot in the least part come in competition with that of Corne and Wine *Ibid.* In *France*, which differeth not much from the temper of *England*; *Silke* is a stranger to those parts of *France* that agree with *Englands* temper; 69. I could wish those words, linea 2 & 4. we know nourisbeth them, to be left out, as devoid of all truth, if applied to the Insect in question: pag. 70. linea 2. let him read *Bonelli*, add *Andream Libavium*, qui peculiari Tractatu in seruo parti secundis Singularium: fuse ac diligenter admodum omnia ad *Bombyces spectantia pertractavit*: similiterque *Olivier de Serres* libro 50. Theatri Agriculture. Among the things which page 70. he thinketh might be trans-

planted profitably into *England*, I could wish the omission of the three first, (*viz.*) *Sassafras*, *Sarsaparilla*, and *Snake-weed*, the which I greatly doubt would hardly be made to grow there at all with any industry, but sure I am, never to any purpose: and the same I believe about their Cedars and Pines. *Medica veterum* is without all peradventure the plant now known under the name of *Lucerna*; wherefore it ought not to be ranked as it is, page 80. amongst the plants now unknown; *Quid est lupinus veterum*, *nemo unquam Herbariorum quod sciam dubitavit quare omittenda ejus mentio inter herbas controversas* page 80. Page 81. What seed, grain, or graine is made of the same feed, and in the same manner, as that which in English is called *Groats* (*viz.*) of *Oates* and of *Barley*; of those three sorts of Cheeses which he reckons up, page 81. onely the second and third are made of Cowes milke, and therefore his expression is too general, and what he says there, which are farre better than our ordinary Cheeses is true indeed, but as true it is, that they are far better than their own ordinary cheeses: & as true likewife, that the best of those Cheeses are no better, nor so good by far as some English Cheeses. *Vrbi gratia Chedder-Cheeses*. He is much mistaken, if he believeth that all those things reckoned up page 82. wil grow in *England* at least to any purpose, especially *Rice*, *Corke*, *Scarlet-Oake*, and that Sentence of *Virgil*; *Ut quid quaque frat regio, quid quaque recusat*. Justly rearmed an Oracle by *Pliny*, doth not depend wholly (as our Author seemeth to take for granted) on the climate, and the latitude of Regions, for were it so *Dictamnus*, *Laser*, *Cinnamonum*, *Balsamum*, *Myrrha*, *Camphora*, *Stirax*, *Mastick*, *Benjovin*, *Caryophylli*, *Nux-Muschata*; and an infinite number of other Plants would not be, and from all time have been confined to such Territories as they are; all the industry of man, and the power and wealth of greatest Princes never having been able to make them grow; at least not to make them fructifie out of their native soiles: I wonder also to finde *Linder-trees* named

named in the Catalogue of Plants, which he would have denizond in *England*, seeing that great store of them and very goodly ones have been growing in several parts of the Land, many years since even in and about *London*, as at *Exeter-houſe*, *Wimbleton-houſe*, &c. and there besides Shew-wood-forreſt in *Nottingham-shire*, abounding in them naturally.

*Paris the 8 November, 1651.*

**I**Come now to your Legacie, whereon these words, page 84. *it caſteſt up Jet and Amber*, I must tell you that as it is moft certaine, that of Jet, good store is found on ſome part of the ſhore of *Yorke-shire*, ſo I dare ſay that upoꝝ inquiry it wil appear, that never any *Amber* or *Succinum* was caſt up there by the Sea; that being a commodity ſo peculiar to *Spruce* or *Pruffia*, as the Sea was never known to render it in any other Countrey of the world whatſoever, page 85. at *Dover* they make brick of Sea-owſe, a thing very incredible to me. In *Cumberland*, out of a certain kind of ſand they extract ſalt; it were worth the while to tell in a few words at leaſt, how they proceed in the doing thereof; Not onely notice ſhould be taken by the Husbandman, or Countrey-Gentleman of the diſſerent colour, odour and taſt of waſters, as our Authour wiſheth them to do, *radix*, pag. 85. but alſo and muſch more (as a thing of a muſch greater and more particular concerne to them) of the wonderfull and vaſt diſſerence of waſters (in which none of thoſe three qualities is notably to be diſcerned) for the ſeverall uſes of ordinary houſe-keeping of Husbandry, and of ſeverall Maſtufactures, page 86. if we may believe *Glauber*, there is ſcarce any ſand without gold; I am very ſure that whoſoever be lieveth him herein, as in many other things, will finde himſelfe very foully deceiver; *Ibidem*, ſave what is taken out of their Ditches. For the word Ditches no wayes proper here, ſhould be ſubſtituted Boggs, Fens, or Moores; *It is indiferent good fuel*, yea, many ſorts of them are moſt excellent fuel.

fuel. An Englishman ſpeaking of turf, ſhould not name *Holland* onely, but *Scotland* and *Ireland* in which two Countreys turf is of very great and general uſe, page 87. There is a ſtone in *Durham*, out of which they make ſalt, I would we vvere told the manner hereof: *Ibidem*, Lead is found in *Durham-vall*: I would faine know what *Durham-wall* is, whether a Town or Countrey, and in what part of *England*, and why *Derby-shire*, where thoſe famous Lead Mines are, is not at all named here, page 94. *Opium* is always an ingredient, this is too generally ſpoken, page 95: I am not well ſatisfied with what he ſayes of tranplanting Elephants into *England*, and making them of common uſe there, for many reaſons; and I believe it would prove as hard a task to people in *England*, with any conſiderable ſtore of Black Foxes, Muske-Cats, and ſome oþers of thoſe Animals named, page 96. in theſe words.

*Paris the 2 of December, 1651.*

**T**He conceit I finde in your Legacy, page 99. *Of the medicinall vertues of the plants being ſublimed into the Inſects bred out of them*, is altogether deſtitute of truth, as very eaſily and practically may be demonstrated, page 101. *That in Ireland rotteness of ſheepe is not knowne*; It is too wel known there; and even in my time, I have ſene great mortalities of ſheepe cauſed thereby. Page 103. *In Holland they keepe their Cattle houſed winter and ſummer*: I never knew any Cattle houſed in ſummer in my Countrey, but all about *Paris* that is very ordinary: *Ibidem*, they bury the graine in the ground; they keepe them indeed in the ground; but in that manner as cannot vwell be called burying; for they dig holes a mans length deep and ſquare, cemented not onely in the bottome, but on all the four ſides, vwith a wooden ſhut at the top, and there they keepe their grains, not lying loofly; but rammed as cloſe as may be;

be ; Rapeſeed-cakes, *Ibidem*, he ſhould have added Linseed-cakes : *Ibidem*, Turnips ; I never knew them given to Cowes in Holland, but at Roven, it is a ufull thing to feed Cowes therewith, and they do thrive wonderfully therewith, as I am told by an English Lady of my acquaintance, an excellent Houſewife, who hath lived a great while in that City, *eadem pagina 103*, which are conſtantly mooved twice or thrice yearly. I never in Holland ſaw or heard of any Medows mown more than once a year : The Paradoxe held forth. *Inītio pagina 144. of the cleannessſe of Hogs, and their not loving Dirt* : I believe not at all to be confornant to truthe ; especially in the ſecond particular. *Ibidem (the Jewes have a peculiar way)* after thofe words, I could wiſh to be inferred ; (which alio antiquitie was moft common among the Romans.) For the Liver of the Gooſe augmented to an exceilive bignesse by a peculiare kinde of cramming, was one of the greateſt dainties of the Romans, as may be ſeen in *Pliny, lib. 10. cap. 22.* and the Authors there alleaged by the Scholiſt.

*Paris 7<sup>e</sup> December, 1651.*

**I**Nſtead of going on for to make an end of my Annotations upon your Legacie, to the end whereof I am wel neer come; I ſhal at this time ſtep back, for to tel you that one of *Purchas his Pilgrims* having given us moft amplie and diſtinctlie the whole manner of making the *Caveare*, as may be ſeen in his *Second Tome, page 1420.* your friend will do well to leave that out of the Catalogue of thofe things, which page 81. he deſireth to be informed of, by the travels of any Merchant or Gentleman : as likewife give you at large a Relation made to mee within thofe few dayes by a brave English Lady, and an excellent Houſewife, greatly confirming and illustrating the practife of feeding Cowes with Turnips ; of which page 103. ſhe telleth me,

me, that at *Roven* (where ſhe hath lived a good while) and in all the Country round about it, they feed their Cattle uſually in this maner. Of Turnips (not of the beſt, but reſue ones, ſuch as being worm-eaten, or otherwife faulty, are not good for mansmeat) they boil a great many in a great Kettle, whole as they are, with their leaves on their tops; til they be tender, adding thereto good ſtore of branne ; (of Wheat onely, because that, that of Rye, is ſcowering, and ſo not proper for them) and afterwards of the cakes of Rapeſeed, or Linseed; which cakes having a ſingular faculty of fatting Cattle, they put much leſſe of them into the Mefh for Milch-Cowes, (for fear of ſpoiling their Milke) than for other kind : of this they give them twice a day, ſo as it maketh the greateſt part of their feeding, muſh more than the hay, which they give them betwixt whiles : and thus they feed them onely in Winter-time, because that all the Summer long they keep them abroad at graffe : Whe-ther thiſ be uſed in Holland as your friend ſaith, I can- not tell of my own knowledge : having never there ſeenē it, nor heard of it: but in France it is of very old standing, as appeareth by thofe words of *Columella, lib. 2. cap. 10.* *Rapa non homines ſolum, verum etiam boves paſ-cant, precipue in Gallia, ubi Hyberna cibaria predicitis pecu- dibus, id olis praeberet.* *De ſeruis* doth alio ſpeak of it, but very shortly, and onely mentioning it in a word or two. *lib. 4. cap. 9.*

*Paris the 6 of January 1652.*

**I**N the 104th. page of your Legacie, where I left with my laſt Annotations, I finde thofe words : *In Burke ſtare many keepe tame Phiaſants, and have gaſtied well there- by* : The which having communicated to a brave English Lady here, a great friend of mine, who hath been a great Houſe-keeper in *England*, and is a moft excellent Houſe-

wife; she tels me that at a Countrey-house of hers, not farre from *Chefey*, she had alvvayes great store of them; insomuch as she hath hatched to the number of 200 in one spring: vwhereof though many dyed, yet farre and farre the greatest part vwould come to perfection. That of people of quality she never knevv any but her selfe vvho kept any; but that there is abundance in the parts neir *London*, vvho keep them, for to make profit of them and sell them to the Poulterers, that there is nothing more easie to bring up, and to keep, than *Pheasants*; vwhen they are once past the first Moneth: for til then, they must be kept onely vvith Aunts eggs, and feed on nothing else; of vwhich one vwould think it a hard matter to get so many, but there are fellowes in *England* vwho for a little money vvil get one as many as one can desire: the first moneth being past, they are kept aftervvards vvith Oates onely, requiring nothing else: but as they love to be kept in grasse fields: so one must change them somevhat oft to fresh grounds, because they tainte do, and for to keep them in, my Lady used to have those parcels of ground, vwhere they vvere kept, inclosed vvith fets.

*Paris the 11<sup>th</sup> of January 1652.*

You shall have now the conclusion of my Annotations upon your Legacy according to your desire.

In the bottome of page 104: your friends speaketh, as if the excellency of Butter and Cheeze depended wholly of the handling of it, and that Cheeze like to *Parmesan* and *Holland Cheeze*, might be made in *England*, if the same industry were

were used there, as in those Countreys, which is nothing so: For though Art and Industry can do very much in this particular, as in most others, whereof I have seen most remarkable examples both in *England* and *Ireland*, yet there is some thing in the particular nature of different waters and different Soiles, and of the food for Cattle thereon growing: and consequently in that Cattles milke, and in the Butter and Cheeze made thereof, which no Art nor humane skill can supply or imitate, no more than the same kind of Beere can be brewed in all places, or the same kind of Wine be made to grow on all grounds. And this is most manifest hereby, that in *Holland* it-self there are made severall sorts of Cheeses hugely different among themselves; which difference is most remarkable in those two excellent sorts, (*viz.*) the *Edam*-cheeze (being that kind which is so much transported into forreign Countreys, and every where known by the generall Name of *Holland*-cheeze) and the *Stolke*-cheeze. And if it should be thought, that that diversity proceedeth from the different makings of Cheeze, used in the severall parts of that Countrey; I can assure you, that if you make *Edam* and *Stolke* boors exchange their habitations, and keep all their own fashions, each of them shall make Cheeses, not such as they were wont to make at home, but as used to be made in the places to which they are come. The like may be said of the green-Cheeses, made in *Holland* of Sheepsmilke, especially those

of Gravesend, Tessel, and Grind; all three most excellent ones; and yet extreamly differing among themselves. And not to go for examples of this, further than *England* it selfe; It were against all reason and experience, to thinke that, that notable difference betwixt *Suffolk* and *Cheshire*-cheeses, cometh onely from the different way of making it. Another thing, which I find fault withall in the same Discourse, is, that the Author nameth the French Angelots among the excellent sorts of Cheese; whereas they are nothing so, neither in their qualities, nor in their price, they being sold for two Sol's a piece, where-as they use to weigh half a pound. I do likewise mislike, that he for to instance in the best kinds of Cheese, he fetcheth *Parmesans*, and *Holland*-cheese from abroad, without taking notice, that at home in severall parts of the Land, and particullarly in *Mongomeryshire*, Cheeze is made equall to the best of these kinds; and at *Chedder* in *Wilesshire*, that which in my judgement is farre to be preferred before them, and to any other cheeze in the world. Page 105. I cannot brook, that he complaineth *England* hath not a Systena, or a Compleat Book of all the parts of Agriculture; and reckoneth *Markham* among them, who have writ onely divers small Treatises of it: whereas *Markham* hath comprehended in his works, what-ever belongeth to any part of Husbandry and of Housewifery too; with very few and small omis-sions; such as in no wise can rob him of the name

of

of a generall writings; his workes also having that excellency, that they are altogether squared for *England*, and goon experiance rather than on Probabilities, and hear-says; to the contrary of what our Authour seemed to taxe in him, aswell as in other writers of that kind; which maketh me suspect, that either he hath not at all been converstant in *Markham*'s writings; or that in reading of him he hath been strangely fore-judged, he being in my opinion, one of the most excellent of his kind; and in many particulars to be preferred before the most excellent of them all. It is true what is said pag. 106. There were among the *Ancient Romans* some appointed, to see that men did till their Land as they shoule; but that which follows: and if they did not, to pu-nish them as *Enemies to the Publique*, is too hy-berbolically spoken, there being a vast difference betwixt punishing one as an enemy to the Pub-lique, and a simple fining of him, which was all the punishment inflicted for that fault, as you may see in the twelvth Chapter of *Aulus Gellius* his fourth Book. In these words, pag. 107. he that turneth fruitfull Lands into barrennesse, as the land of Canaan, very fruitfull heretofore, but now a barren Desart. Our Author saies nothing, but what is common in the mouth and pens of almost every body, and yet the truth thereof is very questionable, as an observant Reader will easily finde by the exactest and latest writers of that Countrey, among whom *Eug. Royer* is to be pla-

placed in the very first ranke. And thus I make an end, having nothing to say to any thing contained in the following pages of your Legacie, the reprinting whereof with thole alterations and amendments I have hinted to you, I doe most earnestly wish for, it being indeed a most excellent piece; and from the beginning to the end fraught with most excellent observations and experiments.

**F I N I S.**

Page 98. line 12.

Mr. Vaughan's Golden Grove should not have been named at all, as containing onely certain Georgicae Animis, matters of Morality, and nothing at all concerning the ordering of Fish-ponds, and the profit of them; of which Dubravius de Piscinis, hath written on purpose in the Latine Tongue.



# A N INTERROGATORY Relating more particularly to the *H U S B A N D R Y* And Naturall History of **I R E L A N D.**

Prov. 14. Verse 22.  
Doe they not erre that devise evill? but mercie and truth  
shall be to them that devise good?



Printed for *Richard Wodenotbe,*  
*M D C L I I.*



## THE ALPHABET of *Interrogatories.*

A.

*Apricocks.*

**V**Hether any thing common in gar-dens, in whose gar-dens, how long since they were brought in first and by whom?

*Acorns.*

Whether any store be in the Woods of *Ireland*, as to feed any great Herds of Swine, and whether they ripen as kindly as in *Eng-land*?

*Acres.*

Difference of *Irish* and *English* Acres, how many feet and perches go to an Acre, how many inches to a foot, and how many Acres to a Plow-land?

*Ale.*

What the best manner of brew-ing it, and wherein it d ffers from the *English Ale*?

*Alder.*

Whether any great store of them any where, to what uses the timber of it is put?

*Almonds.*

Whether any trees in *Ireland*,

whether they bear any fruit at all, and whether it come to any Per-fection?

*Allum.*

Whether any found in *Ireland*, where, what quantity, how re-fined;

*Ambergreece.*

Upon what parts of the coast any hath been found, when, by whom, in what quantity, what sorts, wherein and how much differing from the best?

*Ants, Pismires.*

Whether in any such quanti-ties, as to cause annoyace and waste of graines, what means u-sed to destroy them?

*Apples.*

Whether any great plenty any where, what sorts?

*Artichoaks.*

How long known in *Ireland*, by whom brought in, since when come to be plentiful?

*Ash tree.*

Where most plentiful, in how much time from the seed they will grow to perfect trees, to what uses their timber is put?

R.

*Afes*

## The Appendix.

### *Sheets.*

Where used in stead of dung, in what quantity, what time of the year, what good it doth?

### *Affes.*

By whom any were brought over at any time, what numbers, how they thrived, and whether they did procreate?

### *B.*

### *Badgers.*

Where any are, what store, how they lodge themselves, what they feed upon, what hurt they do, how hunted, how they do to defend or save themselves, how many they whelp, what their skins are worth, and to what use put, whether any body do eat their flesh?

### *Bacon.*

The whole ordering of it, and the best ways?

### *Bay-trees.*

Whether any store anywhere, and of any great bignesse, whether at any time they bear ripe berries?

### *Barley.*

In which parts of the land most sown, in what grounds, how manured, what proportion upon each Acre, what increase, what is the feed-time, whether commonly bread be made of it any where?

### *Barnacles.*

Where any are, in what numbers, how sold, when they come in and go out, whether any such thing be, as Barnacles engendered

in shels out of rotten wood, upon what coasts any such thing hath been observed, when, by whom, where, in what manner: how long ere they come to any perfection, whether they engender at all, what colour they are of, what bignesse, what they feed on?

### *Barred-harbours.*

Where any are, how spacious, how many foot of water upon the barre at full sea, how many at low water?

### *Barrel.*

What different sorts of barrels usual in Ireland, how they differ, what inferiour measure they containe, how many of them go to an hoggshead, and a tun, what proportion they bear to the London-measures?

### *Barken-ground.*

What sorts of ground absolutely barren, not at all, or hardly to be made profitable, in what Countys and Baronies any be, and of what extent?

### *Base.*

Where any taken, what store, when in season?

### *Bats.*

Whether and where any store of them, what hurt at any time done by them to man or beast, particulars of their breeding and feeding, how taken and destroyed?

### *Beans.*

In which parts most sown, on what

what grounds and how manured, with what increase, and for what uses, how much seed put to each Acre, when sown?

### *Beare.*

Wherein differing from barley, where most sown, at what time a year, on what ground, and how manured, what proportion for each Acre, what increase, for what uses, whether any difference in goodness betwixt Beare and Beare, and what difference?

### *Beefe.*

What quantities of beefe were wont yearly to be made by the Merchants in Dublin, and other Port-towns, what it would cost them the barrel, and what they would sell it beyond seas, and in what places?

### *Beech-trees.*

Where any grow, what store, whether they bear nuts, and ripe ones, what uses made of the wood?

### *Beere.*

How brewed in Ireland, what severall ways, which the best, how to make it lasting?

### *Bees.*

Where most kept, where any store of wilde ones, what grounds and herbs they most delight in, how looked to, what hives, when they begin to make honey, when they give over, how much honey and wax ordinarily in one hive, when they take out the honey, whether they take all, or leave

some for them to feed on during winter, what vermine they are obnoxious to, and how preserved from them, when the young swarmes are taken, and how heved?

### *Beetles.*

What particulars observed concerning their nature, breeding, feeding?

### *Birch-trees.*

Where any are, what store of them, how sown, in what time they will grow to perfection, what use made of them?

### *Birdlime.*

Where any made in Ireland, what quantity, in what manner?

### *Birds.*

What sorts of birds every where, what plenty, what goodness, when in season, how taken, their natures, breeding, feeding, what sorts of them are constantly in Ireland at all times, and what sorts do come and go at certain seasons?

### *Birds of Prey.*

What sorts in any place, what store, what hurt they do, how taken and destroyed, how made tame?

### *Blackbirds.*

Where any store, when in season, and how long, when their breeding-time, their feeding, ways of taking them, at what rates sold the dozen, whether any different sorts of them, and wherein they differ?

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### Bloomeries.

The fashion of them, charges of making one, how many people necessary to attend them, what quantity of iron they can melt in a day, and with what quantity of charcoal, whether the iron melted in them differ in any thing from the iron melted in furnaces, and wherein, where any are, whose they are, when and by whom erected?

### Bogs.

What several sorts of them, the nature and condition of each of them, what use is or can be made of any of them, where any very great ones are, and of what length and breadth?

### Bogs draining.

What bogs apt to be drained, how it is done, what the charges, what the profits, where, when, and by whom any great proportions have been drained, and what it hath advantaged them, whether any of them make good Arable, and how long it must be first?

### Box-tree.

Whether in any parts of Ireland it groweth up to an height, and what store, in what grounds?

### Brown.

The whole manner of the making on't, differences of goodness, and from whence arising?

### Breams.

In what parts, what store,

what bignesse and goodness, when in season, and how long?

### Bricks.

The whole manner of making them, what manner of clay fittest for this use, what may be the charges, what errors usually committed in the making, and what the effects thereof, Since when begun to be used in Ireland?

### Bridges.

How many good ones, in every Countie and Barony, of how many Arches, when built, and by whom?

### Brooks.

What brooks have any thing remarkable in their rising, course, over-flowings, (water-mills) violence, fish, &c?

### Broom.

What grounds they be, where it groweth plentifully, and capable of what improvements?

### Bulls.

Of their size, strength, ordering, diet, time of covering the Cows, what particulars observed of their courage, &c?

### Bull-finches.

Their nature, feeding, breeding, plenty, season, ways of taking them?

### Bunting.

Their shape, colours, nature, dyet, breeding, seasons, numbers.

### Buzzards.

Where any be, what store, nature,

## The Appendix.

ture, breeding, shape, bignesse, &c? are champion land, and wha oile?

### Butchers-broom.

In what places it groweth, what use made on't?

### Butter.

The whole manner of making and ordering it, both for goodness and lasting; what proportion of it out of a proportion of milk and cream, different sorts, (for colour, taste, goodness) and the causes?

### Butter-flies.

Their several sorts, natures, feeding, breeding, seasons, changes.

### C.

### Cabbage.

The several sorts of them?

### Calves.

The manner of rearing them, Calving-time, whether at any time more then one calved at once?

### Cane-Apples.

Where any grow, what store?

### Carp.

Where, what store, their season, bignesse, goodness? Carrots.

### Caterpillars.

Their sorts, when and where most cumberlom, what ways used to destroy them?

### Caves.

Where any be, how deep, how large, the fashion of them, what within them?

### Champion.

What Counties and Baronies, altogether or for the most part

### Charcole.

Of what sorts of wood usually made, and the whole manner of making them?

### Cheese.

The whole manner of making it, the different sorts for goodness, with the caues thereof?

### Cherries.

Where any great store, by whom planted, what sorts?

### Chestnuts.

Where any grow, when and by whom planted, whether they bear any ripe fruit, or any at all?

### Cider.

Whether any made in Ireland, where, when, by whom, what quantity, what goodness, how lasting?

### Climate.

### Clay.

What several sorts of it, which good, which barren, how to be handled and mended, of what depth, which best for brick?

### Coales.

Where any found, when, by whom, what sorts, of what goodness, what charges the digging, how deep they dig for them, and in what manner, what soil above them?

### Cockles.

Where any Plenty of them, when in season?

### Cook of the Wood.

Where any be, what store, their size

## The Appendix.

size, colour, nature, breeding, feeding, season, what meat they be, manner of taking them?

### Colliflowers.

In whose garden any, when brought in, by whom, what store?

### Cod.

On what parts of the coast it most abounds, seasons of fishing them, what profit, the whole manner of salting them, what quantity one Fisherman may take in twenty four hours, in what depths, and how farre from the land, what weather and wind best for fishing, what worth the tun, and what the charges?

### Conger.

Where any taken, what store, of what different bignesse and goodnesse, when in season?

### Cordage.

Where any made, what store and size, what charges, what profit?

### Cormorants.

Where any be, what numbers, their bignesse, colour, shape, nature, their manner of fishing and feeding, where they breed, how taken alive, whether ever any body made them tame, who, when, where, what they woud perform?

### Corne.

What sorts are most commonly sownen in each part of Ireland, vwhat ground, and how manured, best for each kind, how much of any sort commonly sownen upon

one Acre, and how much that iseth to yield?

### Cornelians.

Where any grow, since vvh'en, in vvhose Orchards?

### Cowes.

The best vways of ordering them for breeding and milk, vwhen they take the Bull, hovv long after they calve, vwhat quantities of milk ordinarily an English Cow may give in the several times of the year, and vwhat an Irish, their diseases, the nature and the cure of them, hovv old they begin to calve, and hovv long they continue?

### Crabs.

Where they are in any plenty, vwhat sorts, vwhat seasons, hovv they are taken?

### Cranes.

Where any be, vwhat store, their nature, breeding, feeding, season, vwhat meat they are?

### Crayfish.

Where any is taken, vwhat store, in vwhat manner, vwhat seasons?

### Crickets.

Their several sorts, nature, ingredients, feedings, seasons?

### Cromes.

What sorts of them in Ireland, vwhat hurt they do, hovv hindred or destroyed, vwhether any body eats them, and vwhat meat they are? Observations of their nature and properties.

### Cuckows.

Their nature, breeding, feeding,

## The Appendix.

ing, season, bignesse, shape, colour, vwhat meat they are?

### Curwes.

Where any store of them is, their shape, bignesse, colours, nature, breeding, season, ways of taking them?

### D.

### Darnik.

Daws. See Lackdaws.

### Deare.

What store in any place, what kinds, their fawning-time, how long they are with fawn, how many they use to fawn, what time a year they cast their horns, how long it is before they begin to bud out again, and in what space they come to their perfect bignesse? Observations of their nature, long-livednesse: Wherein Chiefly layeth the difference betwixt red deare, and fallow deare?

### Dew.

What time a year, and in what weather, most plentiful, what good or harme it doth at any time?

### Diamond.

False diamonds, like Bristows, found some where, in what places, upon or under the ground?

### Diseases of men.

What diseases peculiar and reigning in some parts of the country? the nature, causes, cures thereof.

### Diseases of beasts.

What diseases amongst all sorts

of tame beasts, Common in Ireland, the nature, causes, cures thereof.

### Dicing.

### Divers.

Where any are, what store, their nature, shape bignesse, colour, taste, season, feeding, breeding?

### Dogfish.

Where taken, what quantities, what season, their bignesse, shape, nature, taste?

### Dogs.

The several kinds of dogs in Ireland, their several natures and properties?

### Dotterels.

Whether any in Ireland, and where their shape, nature, colour, manner of taking them?

### Doves. See Pigeons.

Draining of Bogs. See Bogs.

### Ducks.

Ordering and profit of Ducks. Wilde Ducks, vwhere is any store, in vwhat seasons, hovv taken?

### Dung.

Several sorts of dung usual in Ireland, for vwhat grounds, and grains each sort, hovv, vvh'en, and in vwhat quantity to be laid on?

### E.

### Eagles.

Where any are, vwhat sorts, observations of their nature and properties, their manner of hunting, &c.

### Earth.

What several sorts of earth in Ireland, hovv differing for fruitfulness,

## The Appendix.

fulnesse, and in the several vways of manuring, the defects of each fort how to be attened?

### Earthquakes.

Whether any in Ireland at any time, when, how long continued, what harme done by them?

### Earewigs.

Ebbe and Flood. See Tides.

### Eales.

Where most abundant, biggest, best, vvhile and vwhen taken in great numbers, vvith vwhat nets, in vwhat vweather and season, the manner of salting them, vwhat the charges, and vwhat the profits of the Elefishing, vwhen they come in seafon and how long they continue, vwhat hath been obserued about their ingendring and breed-  
ing?

### Elder.

### Elecampane.

Where any groveth of it self, any vwhere, vwhere, and vwhat store?

### Elmes.

Where any grov in the coun-  
try, vwhat store, by whom plant-  
ed?

### F

Fallow deere. See Deere.

### Fals, Salmon leaps.

In what rivers any are, in what Counties, and Baronies, neere what Towns, how farre from the sea, how high, how broade.

### Faucons.

Where any breed, what store, where destroyed, how taken, how taught, how to be ordered, and

dyeted; Observations of their nature, properties, engendring, manner of preying.

### Fefares.

Where any are, what store, in what seasons, their shape, bignesse, Colour, taste, price, feeding?

### Ferrets.

Where any are wilde, how taken, how made tame, how dyeted?

### Fig-trees.

Where any grow, in whose gardens, whether at any time they beare any fruit, or any at all?

### Filberts.

Where any grow wilde? or in gardens?

### Finches:

Where any store of them, what sorts, how differing in shape and Colour, when in season?

### Fir-trees.

Where any grow, what store, what use made of them: where any found in bogs, how deep under ground, whether the stems only, or with rootes and branches?

### Fish.

What rivers and loghs most abounding with fish, what kinds, what goodnesse; What strange fishes now and then are taken, or cast a shoare?

### Fishing.

What weather in general most fit for fishing, dark, gloomy days and troubled waters, or Sunshine and

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and calmes. The several sorts of netters used in the sea; locks, rivers, with the fashion and bignesse of every one of them; and which nets most used, for which kinds of fishes; the several baites. What other ways used for the taking of fish, besides nets and angling.

### Flax.

What store of flax sowed in each County and Barony, of what goodnesse, the whole ordering of flax, to make it fit for spinning?

### Flies.

The several sorts of them, when they come in, when they go out?

### Fleas.

Flood and Ebbe. See Tides.

### Floods. Land floods.

Which parts most obnoxious to them, what harm they suffer therby, and how to be remedied?

### Flowers.

What variety of rare and choice flowers in gardens, and in whole gardens?

### Flownders.

The several sorts of them, where greatest store of them, when and how long in seafon?

### Foards.

Description of all Foards in a-  
ny County or Barony, that have  
any thing peculiar or remarkable  
in them?

### Foggs.

In which parts most frequent,  
and when, what harm they are

found to do to man or beast?

### Forelands.

Description of all the remarkable Forelands in each County upon the coast, how far they run into the sea, how high, what land, barren or fruitfull, low or high, rockie or sandie, or earthy, with a strand or without?

### Fowle.

What sorts of Fowle in every Province and County, what store, what seasons, how taken, what sorts are constant in the Nation, and what sorts do come and go at certain seasons?

### Fountains.

What fountains in any parts that have any thing remarkable in them, for largenesse, fashion, properties of water, manner of rising, &c.

### Foxes.

Where most abundant, what harm done by them, the several ways of taking and killing them: what particulars have been obserued concerning their breeding, lodging, preying, cunning, what profit made of their skins, and how sold the dozen at first hand?

### Freestone.

What sorts of it, differing in colour, hardnesse, smoothnesse, &c. what kinds grow better by wind and rain, and what sorts worse, where any very deep quarries are, and how deep?

### French beans.

How long tince, and by whom S brought

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brought into Ireland first?

### Fruits.

What several sorts of good fruit in any gardens and orchards, and whose, how it useth to ripen?

### Furres.

What several sorts of Furres the countrey affords, and at what rates, the manner of dressing them?

### Furze.

Several sorts of Furze, what profit Furze affordeth, in what time it cometh to Perfection, what benefit bringeth to the ground?

### G.

### Galls.

Whether any grow upon the Oaks in Ireland, and where?

### Gardens.

Where any choice gardens (for rare plants, flowers, fruits,) when and by whom made?

### Geese.

Where any great flocks were kept, and what profits made of them? Wilde Geese, in what parts, what store, their seasons, whether they breed in the Countrey or come from other Countreys, and from whence?

### Glasse.

Where any Glasse-houses, by whom made, what the profits of them yearly, all charges abated; where they have their materials, if in the land, in what parts, what sorts of glasse they make, and out

of what proportions of sand and ashes, the whole manner of melting the glasse?

### Glue.

What sorts of Glue made in Ireland, in what places, of what materials, after what manner?

### Goats.

Where any flocs kept, what the profits that are made of them, what the yearly increase, what time a year they use to kid, how many at once, how long they are at once, whether any are made of their haire, and what?

### Godwins.

Where any be, what store, their shape, bignesse, Colour, feeding, season, goodnessse:

### Goshawks.

Wherein they differ from other hawks, their shape & bignesse, where they breed, how they are taken, how nurtured, at what games they are best, the manner of their flights?

### Goldfinches.

Where any plenty of them, their shape Colours; how they are taken?

### Grafting.

What kinds of grafting used in Ireland, what time a yeare best for them, what particulars to be obserued about them?

### Gray-bounds.

What kinds of them in Ireland, their nature and properties?

### Grains. See Corne.

### Grapes.

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### Grapes.

Whether any come to ripe-nesse, where, what kinds, in whole gardens?

### Grasshoppers.

Whether any in Ireland, what kinds, what time a year?

### Grasse.

The causes of soure rank grasse, where the sweetest grasse, where the deepest and thickest, what grasse fitteth to be prefered for winter-feeding, what grasse best for Sheep, Cows, Oxen, Goats, Horses?

### Growfes.

Where any store of them, their shape, bignesse, colour, when in season, what kind of meat they are?

### Gudgeons.

Where any be taken, what time of the year, their shape and bignesse?

### H.

### Haddock.

Where taken in great quantities, how farie from the coast, what time a year, how salted, when best of all to be eaten?

### Hay.

All the particulars to be observed about hay-making.

### Havens.

Descriptions of each haven, in what Countie, how far from the next havens, how large, how deep, how far they run into the land, how wide at the mouth, whether barred or no, what

rocks and lands before or within them, the shape of them.

### Hawk.

What sorts of Hawys in Ireland, where they breed, what store, howv and vherin they differ from each other, the manner of the flights of each of them, and at what games each of them best, and howv to be nurtured?

### Heads. Capes.

Description of all the principal heads of the Coast, their heighth, spaciousnesse, whether of bare rock, heathie, grassie, whether steep, or with a strand before them, howv far distant from the next places of note.

### Herbs.

What gardens stored with rare and choice herbs, and with what store?

### Heaths.

Where any grear Heaths, what extent, whether in Champion or Mountain, whether altogether barren, or some wayes improvable, who hath reduced Heaths into profitable lands, what scopes, whi h what helps, and to what advantages?

### Heath-cocks. See Grimes.

### Hedge-hogs.

Where they breed in any great numbers, what they feed on, what harm they do, what wayes used to take them, how they engender, and howv numerously, whether their flesh eaten by any, what use made of their skins?

### Hedging.

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### Hemp.

Where any great quantities sovyn, upon vwhat ground, and hovv manured, vwhat hurt or good it doth to the ground, the vwhole manner of ordering hempe?

### Hernshams.

### Hens.

Where any be, what store, when in season, what particulars have been observed about their nature breeding, feeding, &c.

### Herrings.

On what places of the Coast taken, what time a year, what quantities, how fold the mease, the whole manner of salting and re-salting them, what are the signes of their being out of season, what windes and weather best for taking them.

### Hides.

What quantities yearly used to be sent forth, at what rates.

### Hills.

What Countreys all hillie?

### Hoary-frosts.

What hurt done by them to fruit, corne, grasse, &c.

### Hobbies.

What their peculiar quality, size, what store of the race left, and where?

### Hogs.

### Hollie.

Where any great store growtheth, and to a perfect bignesse, what use made of the wood & of the rind?

### Honey.

What quantities made in such or such a Countie, what sorts, what goodnessse?

### Hops.

Where any hop gardens, when and by whom planted, what yearly profit they yield. Of what goodnessse the Irish hops?

### Horses.

What good races in Ireland, where and whote, where any great steeds kept, by whom, upon what grounds, how long Mares are with foale, vwhether ever they soale more then one at once, at vwhat years they use to give over. Diseases ordinarily incident to horses, the causes, prevention, and cures of them?

### Horseleeches.

### Hounds.

### I.

### Jackdaws.

What store of them in Ireland, where most, vwhat harm they do, their nature and breeding?

### Islands.

### Ice.

Description of the Islands upon the coast, and in the Loghs, their number, bignesse, vwhat kind of soile, and vwhat they bear, vwhat trees on them, vwhat hills, brooks, rocks in them?

### Iron.

### Iron-mines.

Where any Iron-mines are, of vwhat sorts, (rock-mine, vwhite-mine or bog-mine,) hovv found out, and hovv digg'd, especially the bog-mine and rock-mine, vwhich mines the richest, and hovv much oare vwill yield a tun of iron, vwhat kind of iron each sort of Mine giveth.

### Iron.

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### Iron-works.

Where any are, and vwhose, vwhen and by whom made, the charges of making one, and of maintaining one, vwhat yearly profit they yield, hovv much iron they melt in twenty four hours, what proportion of charchoale is laid to the oare, in vwhat order they are put into the furnace, hovv far the furnace is filled vwhat store of men employed about one work, and in what several offices. The manner of melting and hammering the iron, at the forges, and with how much waste?

### Juniper-trees.

Whether any grow in Ireland, and where?

### K.

### Kine. See Cows.

What the best grounds and grasse for Kine to feed on, what diseases incident to Kine, and the ways to prevent and cure them.

### Kites.

What store in Ireland, what places they breed, what ways used to destroy them?

### Knives.

Where any good ones made, where they have the steel, how they temper them, what waters best for to hardenthem, &c.

### L.

### Lambs.

The manner of rearing them?

### Lamprays.

Where any be, what store, how

taken, when in season, how they breed and ingender?

### Lands.

### Leks.

### Larks.

Observations concerning their nature and properties, when in season?

### Leather.

### Lettice.

### Leeches. See Horse-leeches.

### Leeks.

Where any growtheth, what quantity, what goodnessse?

### Lime. Limestone.

### Lice.

What several sorts of kilnes used for lime, and what sorts of fiering, the whole manner of burning lime, and the charges of it, whether any differences of limestone, in colour, brittleness, &c. where they use lime for the enriching of the ground, what quantity to an Acre, what time a yeare?

### Lind-trees.

### Lightning.

Whether any grow in Ireland, where, and by whom planted?

### Ling.

Where any taken, what quantity, what time a year, the manner of salting it, the shape of the fish?

### Lizards.

Observations of their nature and properties

### Loghs.

What Loghs in every Province and County, of what depth, length, breadth, compasse, what Islands in them, and what sorts of fish?

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### Lobsters.

In what places they are plentiful, when in season, what time of the year they cast their coat, and how long it is before they get a new one.

### M.

### Maccamboys.

Whether there be such a thing at all, that this herb should purge the body meerly by external touch, or whether it be a fable, what particular observations have been taken for or against it, the shape of the herb, and in what place it groweth?

### Macarels.

On what parts of the coasts they are taken in any great plenty, when they come to be in season, and how long?

### Madder.

Whether any be planted in Ireland, where, what quantities, how manured and ordered?

*Maggot apies.* See Pies, Maggots.

*Maids.* A kind of scote or thorn-back.

In what parts to be had, what quantity, what time a year, their nature and properties?

*Mallards.* See Ducks. *Malt.*

### Manuring.

The several ways of manuring the ground, with all the particulars of each kind, and where used?

### Marble.

What sorts are found, in what places, in what ground, (champion, mountain or hill) what soile

over head, how deep they dig for it, the charges of digging it?

### Marle.

Where any is found, in what County and Baronie of each Province, how long since it was found, and by whom, what ground over head, and how deep, the depth of the Marle it self, the nature and colour on't, upon what grounds they use it, what time a year, how many loads to an Acre, and at what charges, what grains marled land will bear, and how many years together, how to be used afterwards, and whether it may be used more then once upon the same piece of ground, and with what effect?

### Marshmallows.

Whether any grow of themselves, where, what store?

### Mastiffs.

What store of them in Ireland, their several natures and properties?

### Match.

Where any made in Ireland, of the whole manner of making it?

### Measures.

What severall measures usuall in Ireland, for the measuring of Land, Corne, Beere, Wine, Fish &c.

### Meaws, sea-meaws.

Where any store, what use made of them; their nature and properties; whether there be any different kinds of them; and what?

### Meadows.

### Meadows.

The time and manner of laying meadows, what grounds best for meadows; and in which meadows the sweetest grasse?

### Medlers.

Where any grow, whether wilde, or in Gardens only?

### Merlin.

Where any ayries of them; how and when to be taken; and to be used to the hand; their nature and properties, the maner of their flights; and on what game they are best; how to be looked to, and dieted?

### Mice.

Whether field-mice any where, what store, what harme they do; how destroyed?

### Milke

*Miner.* See Iron-mines Silver-mines

VVhat share the King had in mines that are found out, and what share the Lord of the Manor?

### Minerals.

VVhat severall sorts of minerals, found in any parts of Ireland?

### Mists, See Fogs.

### Moales.

VVhether any be in Ireland, and where?

### Moore-hens.

VVhere any found, what store, what time a year bett for meat; their shape, bignesse, Colours, nature, properties?

### Mountaine.

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What proportion of moun-  
tain in each Province and Coun-  
ty, the length and breadth of it,  
how high, where at the highest,  
what soile, and what it beareth?

### Mad.

Where used to inrich the  
grounds, in what manner and  
proportion?

### Mulberries.

Where any grow, and in whose  
Gardens?

### Mullet.

Where any taken, what store,  
when in season, their nature, pro-  
perties?

### Muskemillions.

Whether any grow in Ireland,  
and come to any perfection?

### Muskets.

Whether any made in Ireland,  
where, and how?

### Musels.

Where in greatest plenty, what  
season?

### Muttons.

General rules about the ma-  
king and ordering of Muttons?

### N.

*Nightingailes.*  
Whether any body ever brought  
any over, and how long they lived  
in Ireland.

### O.

*Oakes.*  
What Oaks of any extraordi-  
nary bignesse any where are, or  
have been lately.

### Oase. Sea-Oase.

What store in any place, what  
kinds

## The Appendix.

kinds, what use made thereof?

Oates.

Where most sown, on what grounds, how manured, their feed-time, their kinds?

Oatmeal.

Where any made, and the whole manner of making it?

Oysters.

Onions.  
Where any store, what sorts, when in season?

Orchards.

Where the most, where any choice ones, when and by whom planted, what good fruits in them?

Osprays,

Where any be, their shipe, bignesse, colour, their manner of taking fish, whether any be made tame, and what sport they afford?

Otters.

In what parts any be, what store, how they are taken, what use made of their flesh, their nature and properties, manner of their building, at what rates their skins are sold at first hand?

Owles.

What sorts of them in Ireland, and where, their nature, properties, nests, dier, whether used for birding in any parts of Ireland?

Oxen.

P.

Paper.

Whether any be made in Ireland, where, the whole manner of it?

Paras.

Parkes.

Where any were before thefle troubles, when and by whome made, what compasse, what vert, what sort and store of Deerein them?

Parrets.

Partridges.

In what Counties and Baronies any be, where they most abound, when in season, observations concerning their nature and properties?

Partridges.

Patricks-Purgatory.

Perfect description of the Logh, Island, Caves, and the whole proceedings there, during the Justiceship of the Earle of Corke, and the Lord Chancellour Loftus.

Peaches.

Where any good ones, and any store doth grow?

Peacockes

Whether any in Ireland, where, with whom?

Pearaes.

Where any store, and what sorts?

Pearmains.

Whether any grow in Ireland, and where, when planted, and by whom?

Pearles.

Where any found, what store, what goodnessse?

Pease.

Where most sown, on what grounds, and how manured, their feed-time, what uses made of them?

Perches.

## The Appendix.

Perches.

Where any, what store, when in season?

Perries.

Whether any made in Ireland, where, by whom?

Perwickles.

Where taken, what store, when in season?

Pheasts.

Where any be, what store, when in season, their nature and properties, manner of hunting and taking them?

Pigeons.

Where any great store of tame ones, and where of wilde ones; what ways used to take the wilde ones; their nature and properties?

Pigeons-dung.

Where used to dung the ground, in what manner, to what purpose?

Pikes.

Where any, what store, what bignesse, when in season, what several wayes of taking them.

Pilchards.

Where any Pilchard-fishing, what time a yeare, what charges, what profit, how farre from the coast, the whole manner of ordering and salting them, whither they are transported?

Pintails.

Pintail is a bird in bignesse between a Duck and teale, of colour like a wilde-duck; in the tail it hath a spring of feathers

in fashion like a buls pisell, three or foure inches long, of dainty various colours, are no where in Ireland, but in Connaught, and there at no other time of the year, than in February; and then they are there in great abundance; so as ordinarily they are sold at four and six pence a couple; they are most dainty meat.

Pipe-savves.

Where any made, what store, what charges, what profit, whether transported?

Pippins.

Whether any grow in Ireland, where, by whom planted, and when, what store?

Pistols.

Where any made, what store, what goodnessse?

Places.

Where taken, what store, what bignesse, and goodnessse, what time a yeare?

Plague.

When any in Ireland, how farre it spread, what numbers it killed how long it lasted?

Plovers.

Gray Plovers, and greene Plovers, where, what store, when in season, what particulars observed about their nature & properties?

Plow-land.

What it is, and of what extent?

Plums.

What sorts of Plums in Ireland, T what

## The Appendix.

what store, where, by whom  
brought into Ireland?

### Poisons.

Particular observations of the  
Antipathy of the Irish earth and  
Aire, against all poisonous crea-  
tures?

### Poplars.

Where any grow, what store,  
what uses made of them?

### Pork.

Goodnesse of Irish pork, and  
the whole manner of ordering  
it?

### Portages.

Where any be, what store,  
what time a yeare; their shape,  
bignesse, nature?

### Potatoes.

Where any store sownen, when  
brought over first; and by whom;  
what uses made of them, what  
time to be taken up, and how  
to be preserved?

### Powder, Gunpowder.

Where any made, what quan-  
tity; from whence they have the  
Materials?

*Prawns, See Shrimps. Privet.*  
*Puits.*

Whether any in Ireland, where,  
what season; their shape, big-  
ness, Colour, nature?

### Pumpions.

Whether they come to per-  
fection in Ireland, where they  
grow; and what store?

### Pumiestone.

Whether any found in Ireland,  
and where?

## Q

### Quails.

Where any, what store, what  
season; their nature and proper-  
ties?

### Quicksorts.

Where any very good ones,  
the whole manner of ordering  
them?

### Quinces.

Where any grow, when and  
by whome planted?

## R

### Railes.

### Radishes.

Where any, what store, what  
season,their shape, bignesse, Col-  
ours, what wayes they are  
taken?

### Rapeseed.

Where sownen, on what ground,  
how manured, the profits thereof?

### Rasors.

VVhere taken, what store,  
what bignesse, and goodness?

### Raps.

Whether any grow wilde in  
Ireland; where, what store; what  
kinds?

### Rats.

Where the most abound, and  
since when; what wayes used to  
destroy them; what parts cleare  
from them?

### Ravens.

What store in Ireland, and  
where most; what particular ob-  
servations have been made con-  
cerning their nature, proper-  
ties, long life?

### Red Deeres.

Where

## An Appendix.

Where any, what store, when  
in season, particulars observed  
concerning their nature, proper-  
ties, long life; when they cast  
their hornes, when they growa-  
gine, and when they come to  
their perfection. In what space  
of time Red Deere commeth to  
its full perfection; their fawning-  
time, and how long they are with  
fawne?

### Red herrings.

Whether any made in Ireland,  
where, what store?

### Reeds.

What sorts of them in Ireland;  
and where; what use made of  
them?

### Rhubarb.

Where it growtheth, in what  
quantitic?

### Ric.

In what parts of Ireland molt  
sown, on what grounds, how  
much to an Acre, and what in-  
crease?

### Ring-doves.

### Rivers.

### Rinnet.

Particular description of al ri-  
vers in each Province and Coun-  
tie, where they rise, where they  
fall into the sea or other rivers,  
through what Locks they passe  
what sorts of fishis in them, what  
fishing, and at what times a year,  
how far they ebb and flow, Ships  
of what burden may come into

them, and how far, how far they  
are portable at all; what towns  
of note, great hills, woods, great  
bogs they passe close by, how  
long, & how deep and broad, where  
at the broadest, and deepest, what  
time a year they use to swell  
most, what weres and falls are in  
them, and whereabouts?

### Roads.

What roads of note upon any  
parts of the coasts; how neer to  
the shore ships may come to an  
Anchor there, in how much wa-  
ter, and for what winds lay  
Landlockt?

### Rockes.

Robin-red-breasts:

Where any are, what store,  
when in season?

### Rooks.

Where any are, what store;  
whether any eat them; of their  
nature and properties, wherein  
they differ from Crows?

### Ros of sheep.

Rushes.

The severall sorts of them, and  
to what uses they are put?

### Russetings.

Whether any grow in Ireland,  
in whose gardens, when brought  
in?

## S

### Saffron.

Whether any growth in Ire-  
land, where, what store?

### Salmons. Salmon-fishing.

Where any are taken, what  
quantities, in what times of the  
year?

## The Appendix.

Salmons-salting.

The Manner of them? what Salt best?

Salt.      Swallows.

Whether any made or refined in any part of Ireland, and the whole manner of doing it?

Salt-peter.

Whether any made in Ireland, where, what store: the whole manner on't?

Sampier.

Where any groweth, and what store?

Sand.

Whether there be any sandy places in the land altogether barren, where, of what extent, and what kinde of sand?

Savin.

Whether any groweth in Ireland, where, what store, to what height?

Sea aire.

What hath been obserued in the severall parts of the coasts: Concerning the sea-aire, what good or hurt it doth, to men, beasts, trees, Corne, and grounds?

Sea-coales, See coales.

Seales.

Where any are, what store, how taken, of their nature and properties?

Service-trees.

Whether any grow in Ireland, and bear ripe fruit, and where?

Shad.

Whether any be taken upon the coasts of Ireland, what quanti-

ties, where and what season; their shape and nature?

Sheepe.      Sham-rocks.

What grounds best for them, how to be ordered according to the severall seasons of the yeare, how to be provided for in Winter, during frost and snow; What diseases incident to them, and the ways to prevent and cure them; things to be obserued in the rearing of flocks; Names of all the great Sheepe-masters, that were throughout the kingdome at the breaking out of the Rebellion; what flocks they had, and what profits they yielded them yearely?

Sheldrakes

Where any be, what numbers; when in seafon, their shape; bignesse, Colour, nature, dyet?

Shel-fish.

What severall sorts of them the Irish sea affordeth, and in what parts in most abundance: When every sort in seafon, and where best?

Shelves upon the coasts.

Where any lay, and what obseruable things can be said about them?

Shrimps.

Where any are taken, what bignesse; what store, what seasons?

Silk-wormes.

Where, and by whom any have been kept, what store, what quantities of silk they made?

Silver.

## The Appendix.

Silver. Silver-mines

Skirrets.

Where any store, in whose Gardens, since when, who brought them first into Ireland?

Slate.

Where any quarries of them are, how deep it lyeth, what kinde of slate it is, (for colour, brittlenesse, &c.) what charges?

Black-slate.

Where digged, what store, the vertues of it, how found out first, when, and by whom?

Smelts.

Whether any be taken in the Irish-sea, where, what store; what seasons?

Snailes.

Whethet ever any such abundance of them any where; as to do any great harme to gardens, or fields, and what wayes are used to destroy them?

Snites.

Where any be, what store; what seasons; their nature and properties?

Snow.

In which parts most snow useth to fall; which is the longest, that it continueth upon the Mountains in any part of Ireland?

Soales

Where any taken, what store, when in season?

Soape.

Whether any made in Ireland; where, what quantitie; the whole manner of making it?

Sows, See Swine:

Soile.

The different kinds of soiles in Ireland; what use every kinde is best for; the excellencies of every kinde; as also the defects, and how to be remedied?

Black-jows, (a kind of vermin.)

Spaes.

Where any in Ireland, of what nature and propertie; when, and by whom found out?

Spanniels.

What different kinds of them in Ireland, with the properties and excellencies of each kind?

Sparagms.

In whose Gardens any grow; what store, and since when?

Sparrows.

The different kinds of them in Ireland; with the peculiar properties of each kind?

Sparrow-hanks.

Where any breed, what store, how to be taken, and ordered; their nature and properties?

Sponges.

Whether any grow upon the coasts of Ireland; where, what store, of what goodnesse?

Springs:

Description of all springs in the severall parts of the Land that have any thing rare, or observable in them?

Sprats:

Whether any taken in Ireland; where, what store, what seasons?

Squires.

T 3

Squires.

## The Appendix.

### Squirrels.

Where any be, what store; their nature, properties, diet, breeding, how a dozen of their skins need to be sold at first hand?

### Starch.

Whether any be made in Ireland; where, what store?

### Sares.

Where any great numbers of them. Their nature, properties; dyet?

### Steele.

Where any made, what store, in what manner?

### Storks.

Whether ever any have been seen in Ireland; when and where?

### Strands.

The different kinds of them, where high; where flat, where rockie, where faire and sandy, where none at all; so as the sea is very deep close by the Land?

### Sturgeon.

Whether ever any seen in the Irish-seas; when and where?

### Straw.

The different uses made of straw; for dung, thatch, &c?

### Strawberries. Swallows.

In what parts they grow of themselves in any plenty?

### Swans.

Where any numbers of tame ones have been kept. Where any store of wild ones; their season, nature; and properties?

### Swine.

The whole manner of order-

ing herds of swine; and what profits to be made of them. Diseases incident to swine; the causes, preventions and cures of them?

### Swords.

Where any made, and where the best?

### Sycomores.

Whether any grow of themselves any where?

### T.

### Talbots.

Where any are taken, of what bignesse and goodnesse, in what seasons?

### Tallow.

What store every year useth to be made and transported at Dublin and other ports?

### Tanneries.

Where any great ones, when, and by whom erected?

### Teales.

Where any great store of them, when in seafon?

### Thornbacks. Thunder.

Where any store taken, when in seafon; observations of their nature and properties?

### Thrushes.

In what parts to be had in any store, when in seafon; their nature and properties?

### Thrushets.

Where to be had, what store, when in seafon; their nature and properties?

### Tides.

On what parts of the coasts very

## The Appendix.

very high and very strong tides go; and where highest; how many foot the water doth rise and fall?

### Tillage.

What things observable in the tillage of Ireland; & what things chiefly to be regarded for the well ordering of it for all manner of graine: and wherein the chief difference between the tillage of England and Ireland?

### Timber.

What sorts of timber in Ireland; of what goodnesse, and to what uses each kind is employ'd?

### Tortoises.

Whether any in Ireland, and where?

### Trane.

Where any made, what quantities; of what fishes, what charges, and what profit?

### Trees.

What sorts of trees, both wilde and others; naturally grow in Ireland; and what sorts have been brought in of late, that grew not there before?

### Trowes.

Wherein extraordinary plenty, or of extraordinary bigness, when in seafon and how long?

### Turbot.

Where any taken, of what bignesse and goodnesse; and at what times of the yeare?

### Turfe.

How many sorts of turfe, what sort the best; what is the deepest

they dig for any turfe, how they do to keepe out the water out of the turfe-pits; whether the turfe-pits use to fill up again, and in what space of yeeres: In what turfe-bogs trees are found, what sorts of trees; and how deep under ground?

### Turkeys.

In what part greatest store is bred; how long it is since they had any in Ireland. What things chiefly to be observed in breeding of turkeys?

### Turneps.

What their seed-time, when to be taken up; what ground fittest for them?

### Turtles.

Whether any be in Ireland, and where?

### V

Valleys. *Venomous creatures. See Poisons.*

### Veale.

Things to be observed about the right ordering of veale?

### Verjuice.

Whether any be made in Ireland, where, what store?

### Vermin.

What sorts of vermin chiefly abound in Ireland, what harme they do; what means used to destroy them? *Vines. See Grapes.*

### W

Wagtailes. Where any, what store; their nature and properties?

### Walnuts.

Where

## The Appendix.

Where any ripe ones grow; and what store?

### Wares.

What wares Ireland sendeth forth; what quantities, to what Countreys; at what rates, what wares are imported, from whence, at what rates?

### Water.

Notable differences of the several sorts of water, and for what peculiar uses each sort of water is fittest?

### Wax.

What sort of wax made in any part of Ireland; and how they make it?

### Wells.

Particular description of all Wells that have any thing rare, or observable in them, either for the nature of the water, depth, &c.

### Wesels.

Where any great store of them, in what places they live abroad, and on what they feed; observations concerning their nature and properties?

### Whales.

On what parts of the coast any Whales have been cast up at any time within memory, what numbers; what bignesse, what time a yeere?

### Wheate.

In what parts of Ireland it is most sown, on what grounds; how manured; what proportion to an Acre; and what increase?

Whittings, and Whiting-maps.

Where most taken, what time a yeare?

### Wigions.

In what parts they are, what store, when in season, their nature and properties?

### Wild-fowle.

What sorts of them in Ireland, what plenty of each sort, and when in season?

### Winds.

Which parts of the Country most subject to high winds, and at what times of the year; what kinds of winds most predominant in the several parts of Ireland?

### Wonderful things.

The turning of wood into stones; in Logneagh and the like; what particulars have been observed about that?

### Wood-cocks.

Where in great plenty, when they come in, and when they go out. Particulars observed about the nature and properties of them; What places fittest for glades?

### Woods.

Where any great woods destroyed within these fourty years; upon what occasions, and by whom; what profit made of the Lands recovered out of the woods: What great woods standing to this day; and in what Counties and Baronies?

### Wolfs.

## An Appendix.

### Woolfis.

In what parts of the Land any are left, and what store, what wayes used to take them; peculiar observations concerning their nature and properties?

### Wooll.

Where the best wooll, where in the Irish wooll differeth from the English; what store

### Wormes.

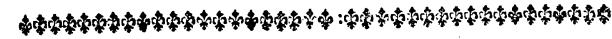
What severall sorts of wormes in Ireland, what harme done by them, and how they are destroyed?

## F I N I S.



## E R R A T A.

Page 8. line 18. for *to devour*, Read *do devour*. p. 12. l. 11. for *add then r.* and *then*, p. 17. l. 2. for *ought like*, *r. ought not like*, p. 19. l. 6. for *the blacknife*, *r. and blackneste*, p. 21. l. 23. *r. from Kernels*, p. 23. l. 25. for *should not r. would not*, p. 25. l. 1. for *bear very r. which bear very p.* 29. l. 31. *r. Meade*, p. 41. l. 14. for *r. of r.*, p. 46. l. 26. for *felling*, *r. felling*, p. 48. l. last, for *bave r. bafe*, p. 53. l. 6. for *Morenty*, *r. Morin*, p. 59. l. 9. for *two r. three*, l. 28. for *detection*, *r. detection*, p. 62. l. 13. for *which begin r. which we begin*, l. 37. for *saffarfas r. saffafas*, p. 61. l. 12. for *at a cherry, r. as a cherry*, p. 64. l. 14. for *dropping*, *r. dropping*, l. 21. *r. search*, p. 64. l. 25. for *Calaninaris*, p. 71. l. 32. for *Kue r. Rue*, p. 73. l. 6. *r. these*, *cattel*, p. 78. l. 22. for *vessels*, *r. bushels*, p. 76. l. 29. *r. exsiccata*, p. 75. l. 23. *r. butt*, l. 30. *r. small matter*.



If any desire to have the great Clover of Flaunders, or the best sorts of Hemp and Flax-seeds of those parts, or Saint Poine, LaLucerne, Canary-seeds, or any sorts of Seeds of this kinde: Let them enquire at Mr. James Long's Shop at the Barge on Billings-gate; and they shall upon timely notice have them procured new, and very good from France or Flaunders at reasonable rates.



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LONDON,

Printed for Richard Wodenothe in Leaden-hall Market, next doore to the Golden Hart. 1659.



דָּרְךָ אֶרְקָנוֹ

OR THE  
PLAIN DOCTRINE  
OF THE  
JUSTIFICATION  
OF A  
Sinner in the sight of God;

Justified by the God of Truth in his Holy Word,  
and the cloud of Witnesses in all Ages.

WHEREIN  
Are handled the Causes of the Sinners Justification.  
Explained and Applied in six and twenty Sermons, in a plain, Doctrinal and Familiar way, for the Capacity, and Understanding of the Weak and Ignorant.

By Charles Chauncy President of Harvard Colledge in Cambridge in New-England.

1 Cor. 3. 10, 11.

According to the Grace of God given unto mee --- I have laid the foundation. Other foundation can no man lay, than that is laid, which is Jesus Christ.

London, Printed by R. I. for Adeniram Byfield, at the sign  
of the Three Bibles in Cornhill. 1659.